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# CACTUS AND SUCCULENT JOURNAL

VOL. XXXII SEPT.-OCT., 1960 NO. 5

Fig. 63. *Crassula namaquensis* nat. size, in the Dodson collection in Millbrae, California. See page 136.
Photo by J. R. Brown

**CACTUS AND SUCCULENT JOURNAL**

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# *Around San Francisco Bay*

*By* J. R. BROWN

Visitors to the gardens in the Bay area notice the difference in the appearance of many succulent plants growing here and those growing in the hotter and drier southern part of the state, this is especially noticed in the Aeoniums and the Echeverias which here attain a lushness and coloring which is often astonishing, the foliage of many plants showing flaming reds.

As the guest of the delightful couple, Mr. and Mrs. J. W. Dodson of Millbrae I enjoyed seeing many hundreds of new and old succulent plants. Some plants which had been prepared for the San Francisco flower show were on the patio, these were planted in shallow bowls and a group of three Echeverias was photographed. The Echeveria in the background is *Echeveria agavoides* var. *quadrifida* and shows very dark blackish-brown tips and upper leaf margins with more erect leaves and is in a twelve inch bowl. The plant on the left is *Echeveria agavoides* var. *prolifera,* pale green and with incurving leaves, this Echeveria may attain a diameter of twelve inches and in addition to the offsets at the base puts out stout stolon-like branches from the leaf axils which bear rosettes. The plant on the right is *Echeveria agavoides* var. *corderoyi* which has more spreading leaves and is not so highly colored as the first named. The latter two plants are in ten inch bowls. Another interesting plant in a twelve inch bowl was a small very caespitose form of *Aloe aristata,* as it will be noted this is almost overflowing the bowl and is very different in growth from the usual slow growing form. This plant came from So. Africa along with the normal form.

In one of the borders was a clump of *Aeonium simsii* in flower, the yellow flowers so dense the foliage was hidden. This is not a new plant but a new and more correct name for *Aeonium caespitosum.* One of the surrounding borders is devoted to Crassulaceous plants and many fine Echeverias were in flower, among them *Echeveria halbingeri,* this is one of the little gems of the genus and has pretty red flowers, it seems to flower best when planted in the ground but it makes charming pot plants, the rosettes being quite firm and attractive. A pot of this little Echeveria is shown in one of the photographs.

Mrs. Dodson won the "best plant in show" award at the San Francisco flower show with a plant of *Echeveria affinis,* a dark brownish colored plant with scarlet flowers. This is quite a feat as the judges of a large flower show where all sorts of plants and flowers are shown usually give succulent plants very slight attention when awarding "best in show" ribbons.

Some of the smaller Madagascar Aloes were in flower, *Aloe bakeri, A. millotii,* and *A. albiflora,* this last Aloe has recently been re-

Fig. 64. *Echeveria halbingeri* approx. ½ nat. size

named *Guillauminia albiflora.* The flowers of *Kalanchoe pumila* were very much deeper in color than when grown in So. California. Saw many new Crassulas; after seeing so many one begins to realize the great task Mrs. Vera Higgins of England has undertaken in working with this genus. A plant of the very succulent *Crassula namaquensis* is illustrated on the Journal cover. A very small Bromeliad, *Abromeitiella* sp. looked very interesting, this was a cluster of six small rosettes, this plant looks very similar to *Abromeitiella chlorantha.* The very white *Adromischus leucophyllus* was noted and a small plant is shown.

There was a bewildering array of plants to be seen and while browsing around I happened to lift up some sprawling plants of *Monanthes anagensis* to see what they were covering and found some beautiful plants of *Haworthia reinwardtii* var. *kaffirdriftensis.* Evidently this Haworthia likes considerable shady protection to look its best, and when well grown it is one of the most beautiful, if not the most beautiful, of the *H. reinwardtii* group. It does not look too well when grown in the open in So. California.

Managed to get in a short trip across the Bay to visit Mr. Al. Irving's garden, the U. C. Botanical garden, and Mr. Myron Kimnach's gar-

Fig. 65. Three forms of *Echeveria agavoides*

Fig. 66. *Aloe aristata*

Fig. 67. *Adromischus leucophyllus* ½ nat. size

den. Many interesting Madagascar plants are in Al. Irving's greenhouse, Euphorbias, etc. and many East African Monadeniums, etc. The weather during my trip was very stormy and wet and so photography across the Bay was impossible as I would have liked to show some of the plants which I saw. Due to the rain we had to confine ourselves to the glasshouses at the Botanical garden where Mr. Kimnach showed us around. Paul Hutchison's beautiful collection of Adromischus spp. looked very well, simply amazing to see such a large collection of this genus. Had a pleasant chat with the very charming artist, Mrs. M. Blos whose work is well known in the "Journal" and saw some of her recent work. I always marvel at and envy the skill of a botanical artist.

The evening was spent at Myron's home, chatting about this and that. Myron recently visited Mexico with Dr. Reid Moran and they found some interesting new plants and rediscovered some old ones, and he will probably be telling about his journey in the "Journal," should be very interesting reading. Apparently there are many interesting succulent plants awaiting discovery in Mexico. Saw some of the plants Myron brough back, curious and fascinating. Myron has a small greenhouse containing some very choice plants and among them one of the most beautiful flowering succulent plants, a large plant of *Adenium obesum,* "The desert rose," the flowers are breathtaking in their beauty.

The Dodson garden being the headquarters of the I.S.I. (International Succulent Institute Inc.) it was inevitable that one would become

Fig. 67. *Aeonium simsii,* reduced

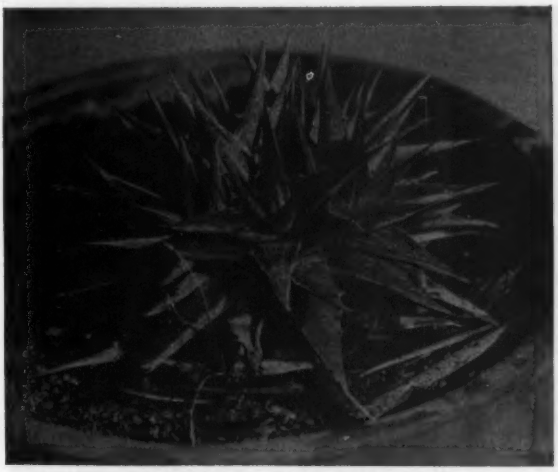


Fig. 68. *Abromeitiella* sp. nat. size

interested in the work of this small group. A tremendous amount of plant material is congregated in the Dodson garden, some of the plants being propagated, others growing along until of a size to be propagated. The aim is to propagate and distribute authentically named plants not commonly in the trade, free from pests and disease. The plants are carefullly grown, carefully named and carefully packed for shipment.

On a Sunday while there, the Dodson garden was the scene of some activity, the officers of I.S.I. converging on the garden to assist in packing the orders received for plants. Messrs. Kimnach, Irving, and Juul were there, Mrs. Juul was also along and seemed to do more than her share of the work. Mrs. Dodson was kept busy preparing refreshments. I managed to get a photo of the group working on the patio, the greenhouse is in the background. It is somewhat remarkable that this group would perform this work as it requires giving up a lot of leisure time and no monetary returns are received by any individual, all of the profits, and they are not very large, are reinvested in more importations and the necessary means to grow and propagate them. Succulent plants are being constantly imported whenever available. The motivation of the group seems to be what is vaguely known as the love of plants. The brunt of the work falls on Mr. Dodson, who is an indefatigable worker, an able organizer and seems to accomplish wonders and is ably backed up by Mrs. Dodson. The other officers are all very skillful plantsmen indeed and I know of none better and they all work together smoothly and efficiently and deserve great credit for the task they are performing.

Fig. 70. The I. S. I. at work

Fig. 69. The patio of the Dodson house

# *Escobaria sneedii* Further Described

CLARK CHAMPIE

Widely scattered through the Franklin Mountains which reach into the sky some 6,000 feet adjacent to El Paso, Texas grows a very interesting and rare species of cactus named Escobaria sneedii by Britton & Rose. This peculiar member of the Coryphanthanae is a clump-forming cactus resembling *Escobaria tuberculosa* so closely that the non-expert probbably often mistakes the latter for the former. And since *E. tuberculosa* grows profusely throughout the Franklins, it has probably served the very worthy purpose of protecting its rarer cousin from extinction.

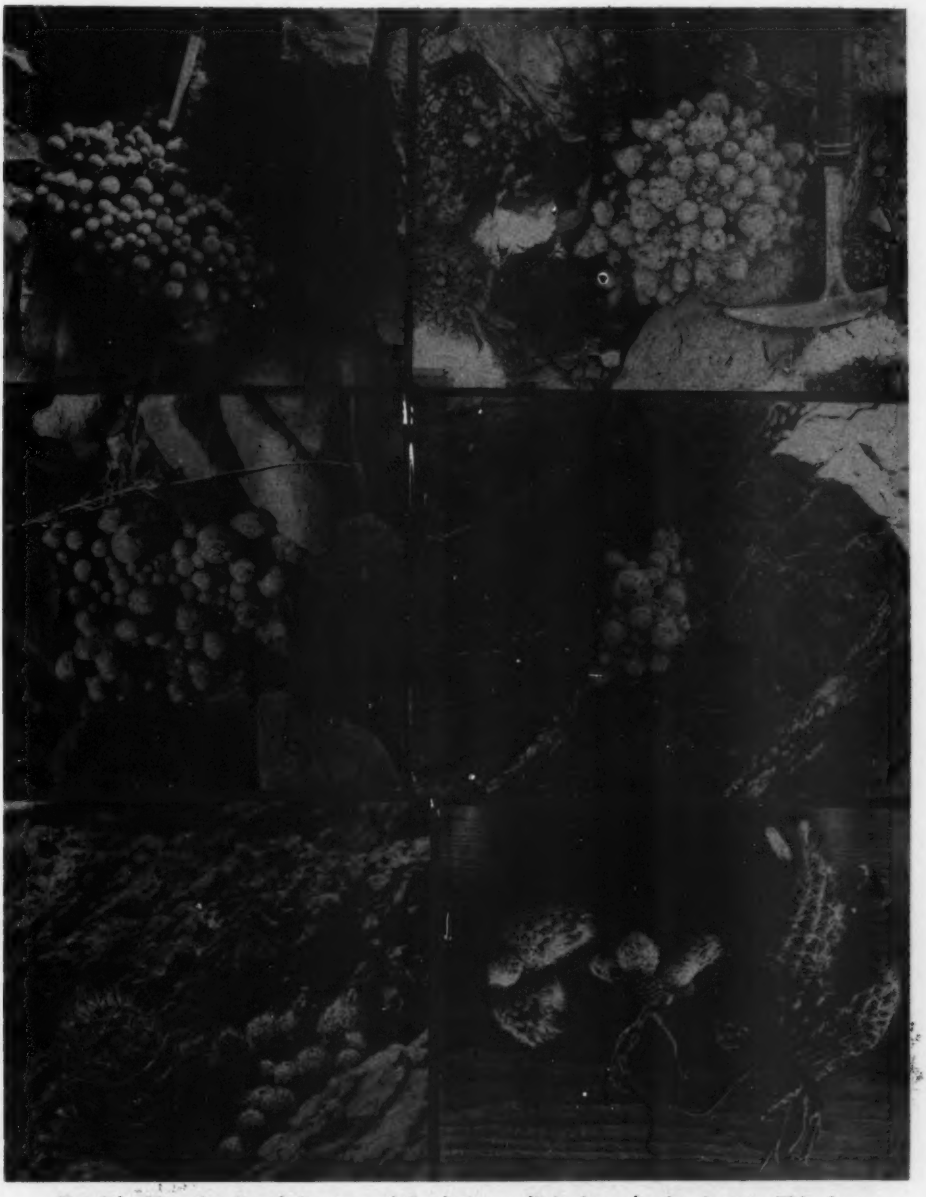
*Escobaria sneedii* blooms about two or three weeks before *E. tuberculosa* but the flower is almost identical both in appearance and color, being a pale pink and formed on the top of the slender stems in late April to early May. However, unlike *E. tuberculosa* and indeed unlike nearly all others in the Escobaria group, *E. sneedii* has green fruit instead of the expected typical scarlet fruit. I have collected dozens of ripe fruits of *sneedii* and for several years now have been growing seedlings from the collected seeds and don't remember a single scarlet fruit in the bunch. Some have had a slightly reddish tinge, but nothing more.

The stems of *E. sneedii* are peculiar in that they alternate between a large globular form that closely resembles *E. tuberculosa* and a slender, pencil-like stem that is very unlike anything found on *tuberculosa*. As for size of the clumps that *sneedii* is capable of forming, there seems to be no definite limit as one of the illustrations shows. The up-side-down specimen pictured must be over two feet in diameter and probably stopped spreading because of space limitations. Dr. Anton Berkman of Texas Western College has a large specimen of similar dimensions which he collected years ago in the Franklins. These Texas-sized specimens are unusual as the average clumps are about three to six inches in diameter.

Always of general interest concerning a rare species of cactus is its adaptability to pot culture, especially in environments far removed from its native habitat. With this thought in mind, I have been observing *E. sneedii* for several years and I believe that it should be able to adapt itself very successfully to most any climate where other species of cacti are successfully grown. I have transplanted it from place to place in my garden with practically no losses and the transplants quickly re-root. I have grown it in pots to which it seems to adjust nicely, especially the seedlings. And to even further simplify its ease of cultivation it does well in half shade or full sun and takes more or less water without complaint. In short, here in the shadow of the mountain where it makes its natural home it refuses to be finicky in its requirements under cultivation. That is a good omen for distant climates. Oh yes, it can even play dead and come back stronger than ever. The first plant I collected about seven years ago received a hot sunny location from my then inexperienced hands and it soon gave every appearance of being dead. Fellow cactus club members suggested that I remove the dead *sneedii* from my garden. But since it was the only specimen I had of this rare plant, I hesitated, thinking that a dead plant was better than none at all. About a year later my "dead" cactus began to send up new stems and now my original plant is as healty as any specimen in my garden. I passed this story around and recently other cactus club members have reported similar experiences with this peculiar plant.

*Escobaria sneedii* is worth an intimate study in its native habitat for several reasons. For one thing, it seems to be highly adaptable to the contrasts offered by the Franklins whose east-facing prominences are exposed to the hot broiling sun which successfully discourages all but the most xerophytic plants from growing there and whose canyon bottoms, only a few dozens of feet away, are so shady and moist that even mosses and ferns thrive there. I have found *sneedii* thriving in cracks of rocks exposed to the full glare of the sun and I have found it growing in the canyon bottoms only a few feet from green moss where the ground was kept continuously damp from seepage of water stored from the annual summer rains. And I have found this amazingly adaptable plant growing under overhanging rocks where it was in the shade for a considerable part of the day.

As might be expected, the plants found in the extremely arid situations in the cracks had clothed themselves with a heavy formation of white spines to reflect the burning rays of the summer sun. These plants had a very different general appearance from the plants found in the shady locations where the tubercles were spread farther apart making the stem of the



Top left: Here the size of the stems of *Escobaria sneedii* is shown by the cigarette. This clump was growing in about half shade on a northeast facing slope under overhanging rocks. Top right: This photo shows another plant which is exposed to the full glare of the sun in a very arid location. Again the plant is densely covered with white spines. This clump is somewhat larger than the average. Center left: This specimen is a typical large clump growing in part shade in the rocky type soil that *sneedii* seems to prefer in nature. Center right: This specimen was growing in a crack which had formed in solid rock with no soil nearby. The only soil available was that which had collected in the crack. The plant shows the dense formation of spines that results when a plant is exposed to the full sun in an arid habitat. Bottom left: Here *E. sneedii* is compared with *E. tuberculosa* in size. Actually, this great a contrast does not hold in many cases as young *tuberculosa* plants often are about the same size as older *sneedii* plants and somewhat difficult to separate on general appearances. Bottom right: This photo shows the marked similarity between the bases and root systems of *E. sneedii* (left) and *E. tuberculosa.*

plant visible. Plants from both locations, when placed in my garden under similar conditions, soon became indistinguishable.

Another very interesting characteristic of *sneedii* is that it can be found growing near the very bottom of the Franklin Mountains and at all elevations up to the very top which is over 6,000 feet above sea level and approximately 2,000 feet above the surrounding mesas. This apparent lack of preference for peculiar habitats within the Franklins themselves has for some time caused me to wonder what is peculiar about *sneedii* that has apparently confined it to the rather restricted area of the Franklins which rise abruptly from level ground where the Rio Grande River flows through the Pass to the North (El Paso del Norte) and maintain the height previously mentioned of approximately 2,000 feet above the river level for about 15 miles northward where they just as suddenly return to the level of the mesa just across the line in New Mexico.

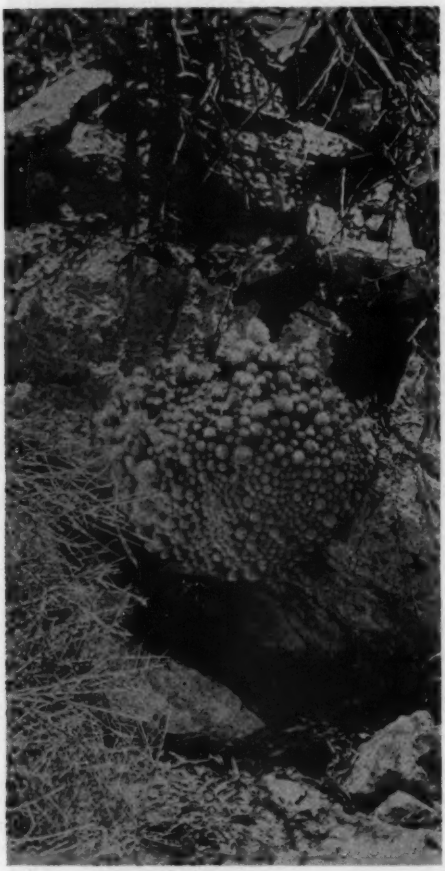


Fig. 72

This photo shows the most remarkable specimen of *E. sneedii* that I have ever seen. It measured about two feet in diameter and still more remarkable it was growing in an upside-down position. There was no sign of etiolation indicating that the white rocks surrounding the plants probably reflect enough light to serve the plants needs. *E. sneedii* is very tolerant of variations in light, being able to grow normally in full sun or half shade, or perhaps, even in more than half shade.) This location is remarkable, too, because it happens to be right in the middle of a mountain wash that shows sign of carrying a very large stream of swiftly moving water whenever the July thunder showers come. However, I carefully looked over the arrangement of the rocks above it and it appears that they are so placed as to divide the water into two smaller streams which flow on either side of the plant, joining into one stream just below the plant. It looks like a little water leaks through the rocks and waters the plant which is rooted in a deposit of rich looking soil on a shelf. If this arrangement had been man-made, it couldn't have been better designed to accomplish the double purpose of protecting and watering this remarkable specimen.

How did *sneedii* get started in the Franklins in the first place? Was this a new species resulting from a mutation of *E. tuberculosa,* perhaps? That could account for its restricted habitat. Or were the seeds brought in by birds making it a new species in name only with proper identification awaiting more intensive study of this and adjacent areas in Mexico? And what has kept it confined to the Franklins when it is so adaptable that it has been able to spread to all parts of this small mountain range?

While most of the above questions probably won't be answered for some time to come, one of them may have at least an indicated answer. *E. sneedii* has been reliably reported as having been collected in the Organ Mountains near Las Cruces, New Mexico some 25 miles north of the northern most portion of the Franklins. Unfortunately, this find can't be verified at this time as most of the Organs are closed to the public, being one of the boundaries of the ultra-secret White Sands Proving Grounds where missile work is going on.

However, there are areas in between these two mountains that are still open to the public and they could harbor *sneedii.* A thorough search through them just might turn up something. And then in Old Mexico are the Juarez Mountains which lie just across the Rio Grande River from El Paso and not much over two miles from the Franklins as the crow flies. Who knows but what *E. sneedii* has been hiding there all the while waiting for some cactus explorer to make an exciting discovery?

EL PASO, TEXAS

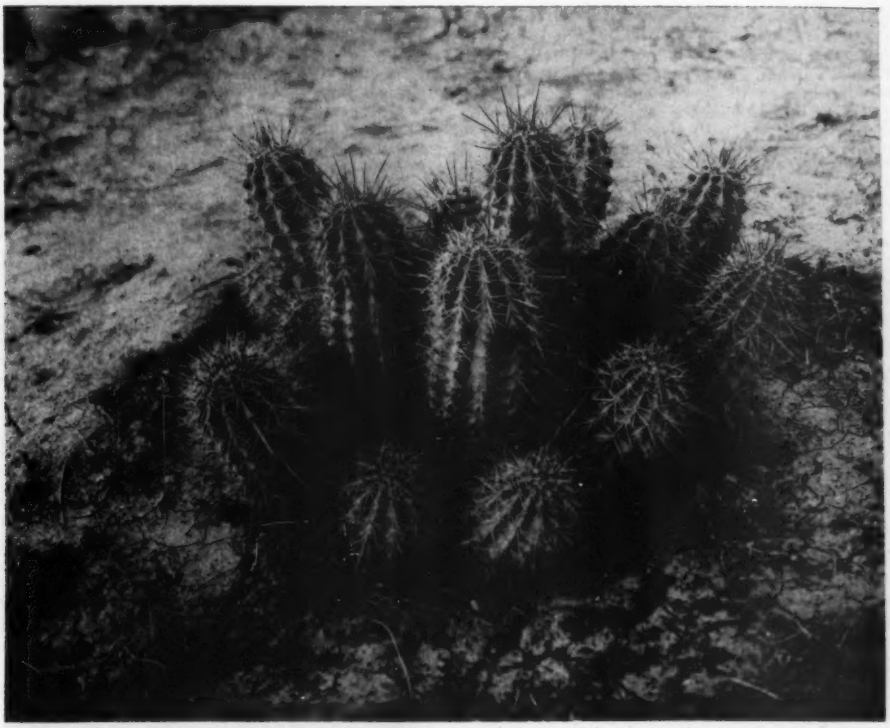


Fig. 73 *Echinocereus rosei*

From the El Paso Cactus and Rock Club Bulletin

## CACTUS FOR THE MONTH

*Echinocereus rosei* is our representative of the *Echinocereus triglochidiatus* group in the El Paso area. It is not too different from allied species found in adjacent areas, But it is rather unique so far as the El Paso area is concerned. Perhaps the characteristic that we appreciate the most about *E. rosei* is the fact that its blooms stay open not only during the day and night but they remain open for about 8 to 10 days before closing. This feature makes it a very desirable show plant. It is a must for every outside garden here in El Paso. And it always plays an important role in our display in the annual flower show.

It grows rapidly from seeds, making a nice pot plant for those who prefer to keep it in bounds in a pot. But locally, it is collected from the field in large clump sizes which provide a large display of blooms when the flowering season comes around. It is rather slow to root in the adult size, the larger clumps taking longer to root than the smaller sizes. Most transplants of even the larger plants seem to be successful. Therefore this plant is widely used for landscaping throughout our city.

*E. rosei* blooms a little later than *E. triglochidiatus*, the first blooms usually opening toward the middle of April. The flower is a beautiful reddish orange and equally attractive in form.

I refere to *E. rosei* with tongue in cheek as this species appears to be so hybridized in the area that it is often difficult to separate the true species from the variations. Not only is there a wide variation in the color and form of the flowers but also a variation in the general appearance of the stems. The colors vary from a pale pink to a deep orange-red with nearly all shades in between. And the size of the blooms varies from a large orange to a relatively small red. I am planting the seeds from the pale pink form to see if this rather unusual shade will stay true to the parent form through propagation from seeds.

*E. rosei* ranges from southern New Mexico through the El Paso region down to the Big Bend area and into adjacent Mexico. In its native habitat it is found both on steep slopes and on the almost level plains just below hilly terrain. But the soil is always well drained in all places. E. rosei stands winter temperatures to at least 6°F. if kept dry.

The specimen in the picture is the first one that I collected. How well I remember the thrill I got when I found it seven years ago in the foothills of the Franklin Mountains (west side). It was a good distance to my car so I had to wrestle for several hundred yards with this large, heavy, spiny clump. But that only made my prize seem the more important. I must be giving it the right kind of care because it is still growing in my garden.

Later I found that there were even larger clumps in the East Franklin Mountains that you could drive a car right up to! But the plant I struggled with is still the largest one in my collection.

CLARK CHAMPIE

## THE EL PASO CACTUS AND ROCK CLUB BULLETIN

Year's subscription, $1.50. Mail to: Clarke Champie, Editor, 140 Champie Lane, El Paso, Texas. Mimeographed with one photo.

Project: To describe the cacti of Texas with illustrations beginning with the species surrounding El Paso and working in an ever widening circle till all the state is covered. Eventually, the cocti of New Mexico, especially adjacent to El Paso, will be covered in the same manner.

Descriptions are made by Clark Champie, who has collected in the areas being described and observed hundreds of plants of the Texas species in the course of the operation of his cactus garden. He plans to make further trips into the field to visit the habitat of each set of species before they are described in the "Bulletin." Therefore, the bulk of the descriptions will be derived from actual observations in the field and cactus gardens and only certain technical details will be taken from the literature. This method should make for more readable and interesting coverage for the amateur. It will be up-to-date as far as more recent discoveries are concerned. The coverage will include discussions of varieties and complexes within certain genera or species which may help to clear up to some extent uncertainties which many amateurs must have concerning Texas cacti because of a lack of recently published information on this area.

Perhaps it should be pointed out that Mr. Champie is not a taxonomist although he has had some college training in that field. Therefore he will not be able to furnish many answers but merely point out and illustrate some of the problems which need to be worked out by the taxonomists. Done in nontechnical language, the defining of these problems can be of considerable benefit to the confused amateur as he can at least place his plant within a group where it can rest till further light is thrown by the taxonomists.

Subscribers to the "Bulletin" should not be led to expect too much. For awhile at least, it may not change much from its present status.

## FROM MRS. M. L. STALEY, NEW JERSEY

Last winter I kept my plants under artificial light. The window sills were too cold, no matter how I pad them. I used a 100-watt bulb about 12 inches above the tallest plant. At 6 a.m. the bulb is 25-watts; at 7:30, 40-watts; at 8:00, 100-watts. Then at 5 p.m. I reduce the light to 40-watts, then 25 and out at 6 p.m. I feel that the intense light can be merciless and maybe the grading is more natural. My plants look very fine with wonderful specimens of Ferocactus echidne, F. melocactiformis, Espostoa lanata, Haageocereus chosicensis, Azureocereus, Lemaireocereus pruinosus, Echinocactus grusonii, Trichocereus pasacana, and many more.

### SUSTAINING MEMBERS

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## FROM MRS. DONNA HIGGINS, ILLINOIS

I built an outdoor box to put my cacti in for the summer. I used a discarded window, hinged it on the back and built sides higher in back and low in front. The glass can be raised or lowered to suit the temperature. One day it looked like rain so lowered the glass and left for the day. When I came back, it had cleared, and the sun had burned several of the cacti. We have no basement and in the winter I put most of my plants in the south window of the bedroom which is the coolest room in the house.

Fig. 74

**HAVE YOU NOTICED**

That when seed capsules ripen on some Haworthias there remains a "cap" with a handle? Botanists might call this a marcescent perianth. This is shown clearly at the lower part of the picture.

**FROM CROSBY RANCH, MALIBU, CALIF.**

After reading Vol. XXXI No. 6, I have been tempted several times to write you, partly in praise, partly to question, partly to suggest. Sorry or not, one should write letters to the editor when they are all steamed up from the first reading or a subsequent rereading. But I do feel that the Journal could stand more of the personal experience, such as we have been getting in "Desert Flowers Under Glass". Marjorie Shields could make a Mammillaria dioica (San Diego Scourge) appear glamorous. I thought she was a little weak on the aloes, but one can understand her difficulties, as compared with the all year round open air growing of Southern California or South Africa.

"Spotlight On Round Robins" and "Cereusly Speaking" are articles which one can turn off the TV and sit down to enjoy, but I do feel that this last issue was a little heavy on the technical side. This amount would be OK if it were balanced or overbalanced by articles in the easy reading class. I am a relatively new subscriber to the Journal and I do not know what has been your practice in the past. Certainly I do not intend that you change the format or type of reading that your subscribers enjoy. Perhaps others would venture to say a word or two along the same line or pen a splendid reprimand.

I thought your idea of asking the questions "What Cacti and Succulent Bloom the Most and Which are the Least Worth While" was a good one and should have brought a flock of answers, unless your readers have become completely lethargic. Most of the answers to the latter part implicated the Epiphyllum. I have felt the same on many occasions. Now my advice to these people would be: throw them all away, except four or five good ones. Grow these the very best you know how, and you will be rewarded by strong, good looking plants, and gorgeous flowers. Epiphyllums do not like neglect or crowding, but similar to their namesakes, orchids, they enjoy your very personal attention.

When I answered the first part of your question, I voted for *Kleinia repens* as the succulent which I thought produced the greatest number of flowers. But I would like to vote again, a second guess. I'll pull the lever over that very excellent and completely satisfactory hybrid Euphorbia lophogona x Euphorbis splendens (or whatever you want to call it—Crown of Thorns). For a period of 1 year in my garden here in Malibu, it has never been out of flowers, and has always drawn the plaudits of all who saw it. I enclose a Kodachrome slide of this one, which has heavy clusters of deep pink flowers. Other plants range from pure white to bright scarlet. I don't know whether the cross was made in Florida, New Jersey, or California, but whoever did it, that person certainly deserves recognition. What short, good name are we to give it?

FRANKLIN D. CROSBY

Fig. 75 Euphorbia lophogona x E. splendens flowering at Crosby Ranch

Fig. 76

**ECHINOPSIS IN NEW JERSEY**

The cactus, pictures of which are enclosed, at the time of acquisition approximately 25 years ago was no larger than the two small cacti on either side of the subject. During 20 years this cactus grew to approximately its present size, but never bloomed. About 5 years ago we accidentally found the correct environment for this plant and since then it has been blooming quite regularly between May and August of each year. The first year of blooming there was one flower and one blooming period. In recent years it has bloomed as much as three times with from 1 - 7 blooms at each period. From the development of the bud to the opening of the flower is exactly 7 days. The opening is always at sundown and requires approximately 1½ hours. The morning sun slightly expands the flower, which is beautiful beyond description, the stem a moss green and the flower a delicate pink and white with a slight exquisite fragrance that lasts a few hours.

OTTO A. BADENHAUSEN

**A NEW NAVAJOA DISCOVERED**

A new species, *Navajoa fickeisenii,* was described by Curt Backeberg in the "Cactus and Succulent Journal of Great Britain," July, 1960. The plant was discovered by Mrs. Florence R. Fickeisen. This second species in the genus has longer spines and a yellow flower. A color plate will appear in Backeberg's monograph. In the same magazine Mr. E. Shurly described two new species of *Mammillaria: M. zacatecasensis* and *M. mollihamata.*

**NEW SPECIES**

*Parodia pencillata* is a new species described in "Succulenta", July, 1960, by H. Fechser and M. G. Van Der Steeg. The plant was found by Mr. Fechser in 1951 in Cafayate, Prov. Salta, Argentina.

## SEPTEMBER-OCTOBER 1960 OFFERING OF PLANTS BY THE INTERNATIONAL SUCCULENT INSTITUTE, INC.

(Please address all communications to the Secretary,
J. W. Dodson, 921 Murchison Dr., Millbrae, Calif.)

ISI-383 *Adromischus herrei* (Bark.) von Poelln. Though not attractive, this is certainly a quaint little plant. The leaves resemble nothing more or less than raisins, both in size, color, and in their roughened surface, and a plant several years old is still less than an inch high. It grows mainly in winter, when watering must be done cautiously, and is semi-dormant in summer when in flower. We recommend this as one of the most peculiar of all succulents. UCBG 50.2109, collected by P. van Heerde, July, 1949, Buffelsriver, between Springbok and Kommaggas, Little Namaqualand, South Africa. $1.50

ISI-78 *Aeonium undulatum* Webb & Berth. We are proud to offer this magnificent species, which is seldom available and even then is usually hybridized. The bright green rosettes are over a foot wide and the leaves are very conspicuously undulate along the edges, the whole rosette resembling a huge green rose. The plants eventually branch, making stems to four feet high, each terminating in a long inflorescence of innumerable yellow flowers. This species, *A. nobile* and *A. tabulaeforme*, are the finest members of this genus. It has withstood 24° F. in California without damage. UCBG 51.889, cuttings from a plant received in 1951 from E. R. Sventenius, collected at the type locality on Gran Canaria Island, Canary Islands. $1.75

ISI-381 *Aloe jacksonii* Reynolds. In recent years a number of dwarf Aloe's have been discovered in East Africa and Madagascar which are destined for widespread popularity as soon as they become available; several are now being propagated for distribution through the I.S.I. *A. jacksonii* is one of the finest, for it grows no higher than about five inches, and produces underground runners that form rosettes at ground-level. The leaves are narrow, fleshy and handsomely spotted. The flowers are a beautiful deep coral and are produced over a long period. You will find this one of the most desirable recent introductions. Our plants are rooted cuttings of a plant collected by G. W. Reynolds at the type locality, El Carre, Ethiopia; around 1955 this plant was sent by H. A. Delap of Thika, Kenya, to Dr. Meredith Morgan of Richmond, Calif. $2.00

ISI-382 *Astroloba aspera* (Willd.) Uitew. This genus resembles the section *Coarctatae* of *Haworthia*, the leaves forming spiralled, tower-like columns, but the flowers are regular instead of bilabiate. Some species are fairly common, but *A. aspera* is the most interesting and also one of the most difficult to obtain. Both the leaves and flowers are beautifully sculptured with tubercles. As this species remains quite small, it is very slow to propagate and we are fortunate to be able to offer imported plants. Collected near Barrydale, South Africa, by M. Malherbe. See photo in Cact. Succ. Journ. Am. 12: 19, 1940. $1.50

ISI-328 *Bulbine latifolia* Roem. & Schult. Many of the Bulbine's *(Liliaceae)* are weedy and barely succulent, but this one is well worth growing. It is reminiscent of an *Aloe*, being stemless and with wide, fleshy leaves, but these are not toothed along the edge and are quite flexible. The profuse, yellow flowers have strange, plumose stamens. Easily grown, but damaged by heavy frost. UCBG 58.1006, plants grown from seed received in 1958 from the Botanical Garden of Durban, Natal, South Africa. $1.25

ISI-370 *Ceropegia rendallii* N. E. Br. This is one of the best items we have distributed. Several species of *Ceropegia* are very popular, for their grotesque flowers always arouse interest. *C. rendallii* is allied to the common *C. woodii*, having a tuber and silver-marked leaves, but its flowers are much more outstanding; they resemble a tiny parachute, as in the much larger *C. sandersonii*, and have a fluted, scalloped, green roof. These flowers are so intriguing that this species will undoubtedly become one of the two or three most popular Ceropegia's. Unlike *C. woodii*, its stems in winter usually die back to the tuber, which should not be watered until new growth starts in Spring. It does not hang freely like *C. woodii* but should be trained on a small trellis. UCBG 52.1258, collected by Eric Codd (#84) among rocks and grass on a low hill ca. 23 miles E. of Pretoria, Transvaal, South Africa, $1.50

ISI-254 *Cissus rotundifolia* (Forsk.) Vahl. Unlike the rarely grown, but more familiar stem-succulents of this genus of the grape family, *C. rotundifolia* is a vine with succulent leaves, its stem being only slightly thickened. The roots are tuberous and the leaves, some three inches wide, are attractively notched along the edge. The small flowers are green and the berries red. Though it is not an extreme succulent, we think you will find it an interesting novelty. The species is widespread from Arabia to Mozambique; our plants were grown from seed collected in October, 1957, by P. R. O. Bally in Borama District, Somaliland. $1.25

ISI-385 *Conophytum saxetanum* (N. E. Br.) N. E. Br. There are nearly 300 species of *Conophytum*, all extreme miniatures that will live happily for many years in a three-inch pot with a minimum of care. The I.S.I. plans to distribute a great many of these species, several in each listing, for hardly any are available commercially and yet most deserve wide cultivation. *C. saxetanum* is one of the smallest, soon forming clumps of innumerable heads, and is one of the few from South West Africa. It becomes dormant in Spring and water should then be withheld until about August. UCBG 51.464, a plant received in 1950 from A. Tischer, Germany. $1.00

ISI-318 *Conophytum minutum* (Haw.) N. E. Br. Forming dense, neat clusters of bluish heads, this species is very desirable, for the flowers are purple, quite numerous and large for such a small plant. UCBG 51.447, cuttings of an import received in 1950 from South Africa, locality unknown. $1.00

ISI-380 *Cynanchum messeri* (Buch.) Junelle & P. de la Bathie. To be frank, this exotically named plant, often placed in the genus *Vohemaria*, is less interesting than its name. Similar to *Sarcostemma viminale*, it would mainly intrigue those specializing in stapeliads and Ceropegia's, to which it is allied; it consists of a leafless vine with a distinctive striped stem and small yellowish flowers, and is native to Madagascar. UCBG 51.767, a plant received in 1951 from J. Gattefossé, Morocco. $ .75

ISI-372 *Echeveria spectabilis* Alex. A shrub with red-edged leaves and with very showy large orange flowers, as its name implies. It is most suitable for an outdoor garden or large patio-planter, and will resist light frosts. Excellent as a background plant for smaller Echeveria's. Plants from Eric Walther, originally collected by T. MacDougall at the type locality in the Sierra Juarez near Macuiltianguis, Oaxaca, Mexico. $1.00

ISI-368 *Haworthia tenera* von Poelln. One of the smallest Haworthia's, the bluish green leaves of this dainty plant are toothed with conspicuous white hairs. The tips of the older leaves are reddish tinged (when grown in strong light). In a genus which has so many similar species this one stands out. It also is one of the few which are more attractive when bearing flow-

ers, for these are large and on a short stalk. It slowly forms clusters and is not fussy about light-conditions, for in its native habitat it grows in somewhat shady places among rocks. Propagated from the clone figured by J. R. Brown in Cact. Succ. Journ. Am. 13: 175, 1941. From the vicinity of Grahamstown, South Africa. $1.25

ISI-369 *Haworthia setata* Haw. This is one of the much desired, bristly Haworthia's, the leaves being edged with long white teeth; our plants closely match the type description. *H. setata* hardly ever offsets, and, as the genus hybridizes so easily, the true species is seldom offered by nurseries. It has taken us 14 years to propagate the limited number we now have available for distribution. This group of Haworthia's grows best under somewhat shady conditions. Rooted cuttings are from the clone figured by J. R. Brown in Cact. Succ. Journ. Am. 16: 3, 1945. $1.50

ISI-246 *Huernia pendula* Bruce. The native African name for this species means "boot-laces", appropriate because of its thin, brownish stems. The red, bell-shaped flowers are freely produced all summer. Though one of the most interesting stapeliads, we have also found it one of the few not easily killed by overwatering, its native locality being quite damp during the growing season. UCBG 51.589, collected in 1949 by E. A. Pienaar on ledges of rocky cliffs along the Kei River, Transkei region, Cape Province, South Africa. $1.25

ISI-386 *Kalanchoe* species. This unidentified species will interest those specializing in *Kalanchoe*. It is a small shrub with smooth, bluish green leaves heavily notched at the edges and with large, lemon-yellow flowers. UCBG 59.005, cuttings from a plant collected by P. R. O. Bally (#B10627) in 1956 on a rocky outcrop at 6000′ alt. just below Aitjo, Mbulu Escarpment, Tanganyika. $1.00

ISI-365 *Monadenium guentheri* var. *mammillare* Bally. We have many new or little-known species of *Monadenium (Euphorbiaceae)* to distribute later, and this newly published variety is among the most decorative. A large specimen is quite striking with its tessellated, radiating, snake-like stems, fleshy leaves and greenish, strangely hooded flowers. In winter it becomes leafless and should then be watered at rare intervals. This genus will not survive in an outdoor garden during winter in most of the U.S. UCBG 54.010, collected by P. R. O. Bally at the type locality, summit of Lasa Hill, 1300 m. alt., Pare Mountains, Tanga Prov., Mombo District, Tanganyika. $1.75

ISI-378 *Monadenium invenustum* N. E. Br. This belongs to a distinct group of Monadenium's which lack the thick, perennial stems of the more familiar species; instead, from the tuberous roots spring thin, annual stems with prominent and often attractively veined leaves. In cultivation these stems often persist through another year and become too spindly, and they should therefore be pruned back so that new ones may replace them. UCBG 54.012, collected by P. R. O. Bally near Kibwezi, 2000′ alt., Kenya. $1.50

ISI-379 *Sarcostemma articulata*. This asclepiad is more worthy of cultivation than *S. viminale*, for its leafless stems are jointed at short intervals like links of sausage and are pendent and more delicate. This is the first introduction of this interesting species. UCBG 58.020, grown from seed collected Sept. 23, 1957 by P. R. O. Bally (#B11739) at Ga-an Libah, Somaliland. $1.25

ISI-387 *Sedum lineare* Thunb. An excellent, hardy groundcover, especially for a steep bank, with creeping stems and small, light-green leaves. UCBG 56.1126, collected by Reid Moran (#5532) on Sept. 10, 1956, ca. 300 m. alt., at Mitake, Tokyo-fu, Japan. $ .50

ISI-252 *Epiphyllum thomasianum* (Schum.) Britt. & Rose. A strange-growing epiphyte with long twig-like stem-bases each ending in a widened, terminal portion which bears the flowers. The latter are very showy and among the largest in the genus, being similar to those of *E. oxypetalum*, with a wide, creamy white limb opening only at night. It was long uncertain to which country this species is native, but several collections from the state of Chiapas, Mexico, and from Guatemala are being grown at the U. C. Botanical Garden. UCBG 53.512-2, collected by Monroe Birdsey (#314), July 3, 1953, epiphytic on *Ficus* sp. at Finca San Jose Las Lajas, below Alotenango, Guatemala. $1.25

ISI-326 *Rhipsalis tonduzii* Weber. Similar to *R. werckleі*, offered in our last list, and also from Costa Rica, but with the stems 3 to 5-ribbed instead of being usually flattened. The flowers and fruits are white and freely produced. UCBG 59.737, collected by C. K. Horich in 1959 on very old trees of El Alto de Ochomogo, near Cartago, Costa Rica, 1550-1600 m. alt. $1.00

ISI-352 *Gymnocalycium westii* Hutchis. Belonging to a group often segregated as *Weingartia*, this small, globular, clustering cactus has yellow, bell-shaped flowers. It is easily grown on its own roots, either inside or out, and is not damaged by frost. This is the first offering of this species, which is pictured and described in Cact. Succ. Journ. Am. 29: 11, 1957. We offer cuttings of the clonotype, UCBG 36.1751, collected in 1936 by James West (#6367) near Cuchu Ingenio, 40 km. S. of Potosí, Dept. Potosí, Bolivia. $1.50

ISI-366 & 367 *Mammillaria woburnensis* Scheer. A rarely offered species and one of the few Mammillaria's native to Guatemala. It quickly forms clusters of stems which are quite woolly between the tubercles, and the flowers are yellow. This is one of the easy-to-grow Mam's. We offer two distinct forms, one, ISI-367, is more columnar, with a narrowed apex, while ISI-366 is more globose, woollier and with a more flattened apex. Collected in Guatemala in 1960 by M. Pacheco H. at Zacapa (200 miles N.E. of the city of Guatemala), growing with *Cephalocereus maxonii* and *Agave* in a flat, arid area of 738′ alt.; according to the collector, the soil was mostly gravel and sand with a Ph of 5.8, and the plants grew in full sun. Each $1.50 or both forms for $2.50

ISI-374 *Mediolobivia aureiflora* var. *rubriflora* (Back.) Back. The plants we are distributing are cuttings of the clonotype of *M. kesselringiana* Cullm., which Backeberg now considers a synonym of the above. Whatever one may wish to call this form, it is an especially fine member of the ever-popular, miniature *Rebutia*-group, being distinguished by its rose-colored flowers. It is easy to grow and withstands frost, though it should be given some protection from winter rains, which tend to rot its soft stems. UCBG 52.1060, from the collection of W. Cullman, Germany, originally collected in Salta, Argentina. $1.50

ISI-353 *Mediolobivia ritteri* (Wessn.) Krainz. Another desirable miniature with small, closely packed heads, cinnabar-red flowers and green stigmas. As it grows above 10,000′ in the Bolivian Andes it is quite hardy in most of the U. S. Grafted, it soon makes large clusters, though on its own roots it will thrive for years in a three-inch pot. Rooted cuttings of UCBG 52.1057, received from W. Cullman, Germany, who raised it from seed from Wessner. $1.25

ISI-376 *Opuntia tayapayensis* Cárdenas. This recently described species is less than 6″ high, forming a spreading mat that is attractive in an outdoor rockery. The small joints are slightly flattened, and the profuse flowers are yellow. It is a hardy species, for with us it has withstood 25° F. and heavy winter rains. UCBG 53.184, a living isotype collected in Jan. 1942 by M. Cárdenas (#4389) at Caranota,

Cuenca del Rio Caine, Prov. Tarata, Cochabamba, Bolivia. $1.25

ISI-377 *Wilcoxia poselgeri* (Lem.) Britt. & Rose. The long, finger-like stems of this cactus, native to Texas and northern Mexico, are not particularly handsome, but its large purple *Echinocereus*-like flowers are both profuse and very beautiful. While easily grown on its own roots, which appear as large tubers, it does best grafted on *Selenicerus, Hylocereus,* or *Opuntia,* whereupon it forms large masses of stems that flower heavily in Spring. Collected by E. B. Simmons between El Sauz and Viboras, leaving U. S. Highway 83, 18 miles N. on State Farm Road 649, upper Rio Grande valley, Texas. $1.25

## SPOTLIGHT ON ROUND ROBINS

Robin membership, like the waves of the ocean, continues to both ebb and flow. Good members resign, finding they can no longer write for the robins they joined earlier, and new members come to fill in the vacancies. Thus is change ever with us. It is interesting to note that of all the original robins begun about 1952 none remains as its membership was then, although International Robin No. 1, C. & S. Robin No. 1 and Euphorbia No. 1 have seen the least changes.

I am happy to welcome these new members to our robins: Mrs. Jack Ashcraft, Moody, Texas; Mrs. V. D. Patten, Costa Mesa, California; Mrs. Vernon C. Rees, Newark, Ohio; Mr. Victor F. Wright, West Minster, British Columbia, Canada; Mrs. Elaine Mehler, Pennsylvania; Mrs. Howard Stocking, New York.

Three fledgling robins took flight in July. Of these, the Window Sill Robin No. 3 has a place for another member, the Opuntia Robin also needs one member and the International Mesem Robin would like several overseas members. In other robins membership needs are: Epiphyllum Robin, 2 members; Epiphyte Robin, 2 members; International Robin No. 2, needs two members; Euphorbia No. 1, 2 members; Mammillaria Robin No. 2 (for U. S. members only), 2 members; Stapeliad Robin, 2 members; C. & S. Window Sill Robin No. 1, one member; C. & S. Robin No. 6, one member; C. & S. Robin No. 7, one member. If anyone is interested in a Seed Propagation Robin there is ample space in No. 2, which has two members waiting hopefully to be joined by others. Five or six additional members would fill this robin and allow it to get on its way. Please write me if any of these robins interest you, mentioning that you are a member of our Cactus and Succulent Society of America. I shall be glad to tell you if and where you may be placed.

For a change, I thought you might be interested in just one robin with its letters on winter-hardy cacti. There would not be space for every word written in one round but the highlights are included with personal remarks to members taking part. This from Winter-Hardy Cactus Robin No. 1. Ethel Karr, in Colorado, begins: "Dear Robineers: I love that country around Tucson and just drool over the magnificent cacti! I took time to look up a fellow robin member, Mr. Nichols, and it was well worth the extra time—a pleasure to meet a fellow collector—then such plants! such beauty of perfection! and such intriguing variety! Mr. Nichols, I've wondered ever since I visited your garden, since you have been collecting but one and a half years, how did you get specimen plants up to fifty years old? Even the Opuntia ficus-indica must have been fifteen years old, and such unblemished perfection! I am sending you a huge specimen plant of Pediocactus. Also an Echinocereus triglochidiatus—I saw you had none of these. Just a small 'thank you' for the ferocactus. I have my book open at Ferocactus. No, these are not 'winter hardy' as we understand the term, but the winter hardy cacti are, as a whole inactive at this date (February), so we will take up plants hardy to the Southwest. According to Britton and Rose, this species includes 34 varieties, many of imposing proportions and deserving collection. They are native to Texas, California, Arizona and Mexico. All Ferocactus require full sunshine and warmth, a moderately rich soil, porous and perfectly drained, consisting of garden loam, leafmold or old cow manure, gravel or stone chips, with much old mortar or hard limestone gravel and should be kept rather dry. Gilbert, most crested Pediocactus are found by people who do not know how to handle them properly and they fail to survive. My Echinocereus viridiflorus, struck by a hail storm in 1958, is still alive. I could graft it but I notice winter hardy cacti do not do well grafted on non-hardy stock. So I haven't risked it. I have always thought Homalocephala texensis of exceptionally easy culture. I just water when and if I think of it. No special soil mix. I always see there are nice drainage holes and coarse gravel in the bottom of the pot. Remember they come from the arid parts of Texas and New Mexico."

Gilbert Taylor, in Oklahoma, writes, "Dear Friends: While at Mangum this past week I got cuttings of five opuntias, all tree type, three plants of coryphantha vivipara and one three-quarter inch seedling of Neobesseya missouriensis. The opuntias were kleiniae, davisii, imbricata (arborescens), spinosior and the supposedly white flowered imbricata. I had planned to get cuttings of most of the other flat pad opuntia in my collection but it snowed three times and the temperature was below freezing. In the greenhouse I have had plants in bloom since about the first of the year. First to bloom was Ancistrocactus scheeri followed by Mam. lasiacantha. John, no, I don't move my plants out of the greenhouse during the summer. In normal years I believe the excess moisture would ruin the more tender plants. I water all my plants alike, liberally in spring and summer, taper off by October, then very little or none November through March. The greenhouse where I keep them does get to freezing some during cold spells. Roy, I enjoyed reading the articles about the Desert Botanical Garden. I walked along with you over some of those paths in memory. Will, you were asking about our preferences. Of the hardy plants, the opuntias and Echinocereus are mine. In the greenhouse, Mams are first with Coryphantha, Echinocereus and Echinopsis next in line. Ethel, I realize how scarce crested plants are in nature. I've found a few since I have been collecting. Grafting is the fastest way of increasing the size and number of a single crest."

P. G. Nichols in Arizona writes, "Dear Winter Hardy Robbins: I don't generally water when planting but starting in April I water once a week until October. All get watered alike. We had a very hard winter here. I'm sure it froze at least thirty nights and frosted many more. I lost several South American cacti but am only interested in those that can take this climate. John, you would be surprised how much rain we get at a time. We have seasons when it rains every day for five or six weeks. I have twelve beds made of stones and dirt raised about six or eight inches above the level ground for small cacti and I lost them in these beds also. I hauled the soil for these beds from several different places thirty miles away. Some have limestone dirt, others fine volcanic rock and dirt, others desert dirt and sand mixed. The cactus does just as well in one as the other as far as I can see. I never use any plant food or fertilizer."

Roy Vail from Indiana writes: "Dear Robin Mem-

bers: Sounds and looks, Mr. Nichols, as if you have a wonderful garden. Did you move those Carnegia yourself? They are very nice and so are the Ferocacti. It is interesting to notice how the same species in Arizona will have all shades of color of flower from completely yellow to completely red. I think my favorite of the genus is F. latispinus. It is a very nice flat plant with wide central spines which first curved down, then up and then down again at the tip if I remember. The only one I ever found in the field was growing on the lava flow right next to the University of Mexico. I have never had much luck growing Homalocephala texensis. A big one I bought while crossing Texas in 1953 died of rot a month or two after I got it home. I have a small plant in my collection but it doesn't do anything. Just sets there. The cause of crests is a big discussion question. After studying something about the structure of cells and the cause of mutations and the growing points of plants I don't see how physical damage, like hail stones, etc., could cause such an upset, but must admit, three out of four of the crests I have looked at in nature were on damaged plants."

John Daily in Indiana writes: "Dear Members: I have nothing but good news of my hardy plants this year. As you know I provide no protection whatever from cold or moisture. The winter was continuously cold and the spring rather dry. My old cluster of Echinocereus coccineus var. inermis had twenty-three buds and they will open in another week. Other clusters of the same have never flowered. All have been out four years. Plenty of growth, however. The Echinocereus from Oklahoma look as good as they do in the wild. One old one is ten inches high. Lies flat on the ground in the winter and up in the spring and now has three buds. It is similar to reichenbachii with flat spines. Some of these were white spined and brown spined types. Some are shoots from the parent plants which did not do so well. Triglochidiatus all seem to be in good shape but no sign of buds. Two four year old Sclerocactus whipplei are still in good shape and showing buds. Coryphantha vivipara survived another year and has several buds. A cluster of Neobesseya has lived and is in good shape after three years. Opuntia imbricata shoots as well as that of O. davisii showing good growth. O. rutilla does very well here. Now you can see why I am so elated and believe that winter hardy plants are worth the effort. I depend on nature for water. Ethel Karr, you mentioned Pediocactus crests. They are not the most adaptable of cacti. Funny thing—I had a potted cluster which picked up a little rust last fall, so I left the pot and all out in the garden and you should see it now. Each head has so much new growth on it that the cluster looks like a newly collected plant. P. G., your pictures are proof that your garden is out of this world and probably even for Arizona."

Will Carr in Romford, Essex, England, writes: "Dear Members: What do you think of a Pediocactus, wrapped up for three weeks nearly—blooming soon after delivery. Besides which practically all have rooted and are growing, and I have hopes of flowers from others. My first pediocactus, after a shaky start, blossomed this year—just one. It was a real beauty, most particularly when under a small magnifyer—white, red-brown, even pink spines. The flower was of a silvery white to my eyes with fine clear yellow stamens. Looking up Borg I was puzzled by the description of flower as pink. Now with the comparatively giant 'minor' (P. minor) I have, I have the solution. When in the more bell shape it *was* pink—mostly center stripe—but when fully expanded it was silvery or silky white."

Mr. Nichols' ending to his letter will end this report. He said, "Folks, I am all for long newsy letters. What is four extra cents on a letter when you consider all the good reading you get. Don't laugh, but I've read these three times. How is that?"

While this is just one round of one Robin, we have many equally fine ones, and perhaps this may inspire some members who haven't yet joined one to think about doing so now. All that is necessary is to write to me. Cordially yours,

(Mrs.) Gladys H. Panis,
P. O. Box 705,
Falmouth, Massachusetts

## EDITORIAL

Most of the articles sent in have been about the other succulents and we are beginning to wonder if we have any cactus specialists enthusiastic enough to write about them. We can only publish what is sent to us, so why not renew the interest in cacti by sending us your experiences in growing them; tell us which ones flower, and send along black and white photos. This Sept. Journal is truly a "cactus issue" and if you like it please tell us so. Also please send your questions to Harry Johnson, Johnson Cactus Gardens, Paramount, California, and they will appear in his "Questions and Answers" column.

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Mrs. Atwood of Washington would like to see pictures of collections so that members can communicate with each other and exchange plants and ideas.

* * *

From Mrs. Himmerman in Australia comes an interesting note: "My word, we see a lot of desert cacti in many of the TV films, especially "26 Men" filmed on the activities of the Arizona Rangers. We also watch for cacti in all the Westerns and I may add that that is the only reason these films are worth watching." We hope Mrs. Himmerman saw the "Maverick TV Show" in which a student of cacti called a tired old Prickly Pear a Pachycereus and he kept it in a baggage car where "the humidity would make it grow over night"!

* * *

The October issue of Sunset Magazine had an article "Cooking Discovery: Prickly Pear" with twelve recipes for drinks, salads, and jellies. If anyone is interested we might be able to locate a copy if you will send $1 to the Journal.

* * *

Dr. Irving Reimann, Director of the Exhibit Museum of the University of Michigan, makes the following suggestions:

"I recently was given several year's back issues of the Journal, beginning in 1941. I have gone through them with much pleasure and profit. My vote for the articles most valuable to the amateur are those by expert growers who discuss individual species, or closely related groups of species, with special emphasis on their cultural requirements. My greatest source of frustration was in finding references to desirable species for which I do not know a source for purchase. The best source I have is Johnson's, but I would certainly appreciate a reference to another domestic source of rare succulents. For instance, Johnson lists very few *Faucarias*, or *Cotyledons*, and no *Trichocaulons* or *Hoodias*.

"Since the editor from time to time has asked for suggestions from readers, I should like to say that those of us who keep our back issues unbound would appreciate having the table of contents on the front or back cover, like the Reader's Digest, the Journal of Paleontology, and many others. This would save much time in hunting up remembered articles for which we have forgotten the reference, and it would also save some wear and tear on the journals themselves."

## CACTI AND SUCCULENTS—BRISBANE

*By* F. W. MARIEN Gardener-in-Charge, Succulent Section

In 1953 the administration of Brisbane Botanic Gardens decided to start a new project. An area was set aside for development of a Cactus and Succulent garden. The project met with immediate success. The enthusiasm of the staff and many valuable donations of plants and propagation material have made it now what we can claim with justifiable pride as the most outstanding collection of xerophytes in any Australian Public Garden.

Of course we are a long way from being the equivalent to either Berkeley or Kirstenbosch, but since the project has never been static the position could arise when we need not pronounce these august names with awe.

Owing to climatic conditions, orthodox greenhouse culture is entirely out of the question, the humidity during the summer months being such that the author very often wishes that the plants could get some form of air conditioning without the consequent drop in temperature. However, not having the above amenity, we have sought to overcome this defect in climate in installing lean-to structures against a lightly coloured wall (to provide some reflective light). These structures consist of a glass roof, with a wire mesh front instead of a wall. This provides a considerable amount of ventilation as well as acting as a deterrent to vandals.

Our winters being dry, the South African and stemless mesembryanthemums do very well here, particularly so since our seasons coincide. Some of them are grown in pots; however we have found that flats produce the best results, and in addition provide a better display. We think that half a dozen flats of *Pleiospilos bolusii* in flower are hard to beat. In fact, Pleiospilos are favourites with the public at any time. Arranged among small pieces of rock to show off their mimicry they never fail to fascinate even the most blasé collector. This genus is very well represented in our collections with *P. bolusii, P. simulans, P. nelii* to the fore, as well as some plants of *P. willowmorensis, P. nobilis* and a good mature plant of *P. prismaticus.*

We have found that most stemless mesembs. appear to have pieces of rocks around them, so much so that one is tempted to say it could be an important ecological factor to be considered by anyone who intends to cultivate this very interesting group of plants.

Some plants do exceedingly well, so much so that *Anacampseros rufescens* is almost a weed. It is grown without any protection in the open and receives anything up to 50 inches of rain annually. *A, arachnoides* and *lanceolata* are quite hardy too, but *A. albissima* (grown from seed) a solitary plant among the collection, is only about ⅝" long after 5 years.

Cacti are very well represented. There are about 300 species and varieties of Mammillarias and 50 Echinocerei, just to mention two large genera. The Echinoceri flower particularly well and since some of them are quite large plants the succession of blooms produced is rather spectacular.

Stapeliads do quite well, despite humidity; *Hoodia burkei* and *H. baihii* head the list of this group. Trichocaulons are represented by *T. kubusense* and *T. cactiforme.* The latter plant is very prone to fungal infection with consequent rot. *Edithcolea grandis* is a magnificent plant when it's in flower with great brown pansy-like blooms (owing to the curling of the tips). It's something which proves most breathtaking to those who have the pleasure of witnessing it in bloom. There are about 35 spp. in this group and new species are continually raised from seed obtained mainly from Kirstenbosch.

The Gardens are not without museum pieces. The collection contains a magnificent specimen of *Aztekium ritteri* with two heads estimated to be at least 50 years old. This plant was donated by a generous benefactor a few years ago and has flowered regularly ever since.

Five species of *Ariocarpus* including a plant of *A. fissuratus* about 3inches wide with slightly smaller plants of *retusus* and *kotschubeyanus. A. lloydii,* and *A. trigonus* grow well and flower regularly.

The climate definitely favours Melocacti, although grown from seed, *Melocactus bahiensis* developed a cephalium in 5 years, while *M.oaxacensis* and *M. amoenus* show considerable promise. Recently we have raised seedlings of *M. matanzanus* which could be a very interesting plant.

Where possible, the tendency here is to avoid the larger plants such as Cerei as the Queensland law prohibits the cultivation of cacti except in pots or other containers, and while other people may have different opinions, our staff maintains that a 15" pot is as far as they are prepared to handle, particularly since we repot annually.

Finally, mention must be made of stringent laws governing the cultivation of cacti. The federal law prohibits the importation of plants or seeds of any plants of the family Cactaceae, and the state law prohibits the sale or barter of the same, with the previously mentioned restriction of growing them in receptacles only. Despite all these handicaps our project advances and must continue to do so.

The following color plate is from Vol. II "The Illustrated Reference on Cacti and Other Succulents" by Edgar Lamb. $6.95 Abbey Press.

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# DESERT FLOWERS UNDER GLASS

*The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand*

*By* MARJORIE E. SHIELDS

## CHAPTER 19
## BRYOPHYLLUMS & KALANCHOES

While we have been lost to the beauties and glowing colours of the Lobivia group I have been carefully holding back this large plant of Bryophyllum aliciae to give you a better view. Over 5 ft. high it provides a little welcome shade for the Lobivias from the hot morning sun. Its roots are in the ground under the bench at the edge of the footpath and it doubtful whether it would have attained this height or had such a magnificent head of flowers had it been growing in a pot. Look at the huge downy leaves, 10 inches long by 6 inches wide! Because of the texture of these leaves this plant is now known as B. pubescens. We have almost to look up to see the enormous head of delightful orange bells it carries on the top of the tall stem. See how the blossoms are composed of four recurved petals with rounded tops? Now lift one. How delicately it is veined with red inside! But look at this other head. It has finished flowering and here is one of nature's many miracles, for a very curious thing has happened. Tiny plantlets are sprouting all over it! This is the method this plant uses to propagate itself. Bryophyllum means plant on a leaf, but this one carries its plants on its head!

Right around this centre bench we will find Bryophyllums and Kalanchoes used to divide the different groups of cacti. But they are not all on the bench, some, like B. pubescens are growing in the ground, others are in large tins or battery cases along the edge of the footpath. It would be to our advantage to see them all now and then return to the cacti later. Bryophyllums and Kalanchoes have two distinct periods during the year when they are at their best. First when in full growth, the beauty of the leaves is most apparent, but later when the flowers appear the leaves have lost their glamour and in some cases are gone altogether and the plant presents a very bedraggled and dried up appearance. As the flowers fade, new growth starts from the base of the plant. Then the old flower stem may be cut out leaving the new growth to take over. A better plan is to remove the new growths when large enough, plant them—very often they are already rooted—and grow a new plant. This method gives a much better plant and applies to both Bryophyllums and Kalanchoes. Although the former grow plantlets on their leaves (or heads), whereas Kalanchoes grow from shoots, both will send up a plantlet from the base of a leaf if planted in sandy soil, but this method is rather slow.

Here is one with plantlets growing round the edges of the leaves, some are just forming, others already have quite long roots and the leaves to which they are attached have had practically all the nourishment drawn from them. This is a wonderful example of plant production, but it is just as well it is not a common method or we would soon be living in a jungle, for these plantlets, on falling, root very readily. This plant is very common in collections here, because of this quick method of reproduction. It came to us as B. pumila but this name is incorrect. Could it be B. laxiflora? Even though almost a weed I would not be without it in my glasshouse, for during the winter months the flowers are a great asset. The bluish green leaves have scalloped edges and at the base of each scallop is a deep purple splotch, while at the stem end the last deep scallops fold themselves back over the leaf. The flower stems are at first hung with green grape-like bladders which later turn purple, and finally split at the base to let through the small tubular bright orange flower, the end of the tube breaking into four tiny rounded petals. It is a quaint little blossom measuring about an inch overall including the bladder, and they are so numerous, hanging round the stem like a small chandelier with pendant lights. This inflorescence lasts for six weeks or more whether left on the plant or picked for indoor decorations.

Another Bryophyllum with the same type of flower is B. pinnatum. But what a magnificent head of bloom this one has! The whole inflorescense measures from 18 inches to 2 ft. in height with a spread of over 12 inches. Even though so large it is the daintiest of them all. The maroon flower stem flecked with pale pink, branches all the way up with horizontal branches in pairs, each successive pair at right angles to the previous pair right up the stem becoming shorter and shorter as they reach the top. On the end of each seemingly frail branch hang the clusters of beautiful blossoms, each cluster a perfect candelabrum. The 1½ inch long calyces hanging like little sausage balloons are palest green—so delicate is the colouring they look almost transparent, while the top of each bladder is flushed with bronzy maroon. When the bladder opens at the base, four bronzy red

sharply pointed petals flare out from under it. The flower is actually yellowish green, spotted and flecked so thickly with dull red it looks almost bronze. A single blossom, together with the bladder-like calyx is 2½ to 3 inches long. The little stems holding the blooms are so slender the slightest breath sets them all in motion. When a branch of the inflorescence is picked and placed in a vase it looks like a Japanese floral arrangement.

Fig. 77. Top row: Bryophyllum pubescens, plantlets of same, B. laxiflora. Center row: B. laxiflora, B. pinnatum, B. fedtschenkoi. Bottom row: B. daigremontianum, Kalanchoe marmorata, flower of same.

There are many varieties of B. pinnatum. This one comes from Norfolk Island in the Pacific, and the inhabitants claim it is its natural habitat. But this is questionable. Don't you think it more than likely that Nelson the Botanist who sailed with Capt. Bligh and met his death on the fateful Bounty, could have left seeds there or even plants? His trip on the Bounty was not the only one he made to the South Seas. He also voyaged with Capt. Cook and was with him when he discovered New Zealand. He had a great knowledge of the Pacific Islands and it is known that he called at Madagascar the home of Bryophyllums, which makes it possible that he was responsible for the plant's arrival at Norfolk Island. However it arrived, it has taken kindly to its land of adoption and these enormous branches of bloom are flown to New Zealand during the winter. My plant was grown from one of these imported heads of flowers, making it all the more interesting. I might add that the outside grown ones from Norfolk Island are far more robust looking and have much deeper colouring than my glasshouse grown one, that is understandable. Here is another B. pinnatum with much smaller pinnate leaves (that is a compound leaf, with opposite leaves on each side of a common stem, like a rose leaf.) outlined with bright red. It makes a good pot plant as it is bushy and does not grow tall—at least not so far! But there are no flowers yet. It comes from Tahiti, in the Society Group, another group of South Sea Islands.

Hanging on the archway is B. fedtschenkoi, one of the prettiest of the group. These flower buds too hang like small grapes, green at first then turning pale purple. When the pinkish orange flowers break through, the grape or bladder practically disappears as it has to open wide to display the bell, which has four wide rounded petals. The exquisite pale pinkish mauve colouring of the foliage shows off the delicate tints of the flower to perfection and that is what makes this plant so attractive. As it is not tall growing it makes a delightful pot plant. Notice how the leaves all face the same way, turning to the light and slightly towards each other leaving the back of the stem bare. This formation is even more noticeable in B. humbertii also hanging on the trellis. The closely packed leaves along the lengthy stem actually face each other and look like a row of moths with half folded wings. They are blue green in colour with bright red edges and practically no indentations whatever. From between the leaves, very long bright brown aerial roots go searching in all directions, whether for food or anchorage they alone know, but they do give the plant an untidy appearance. It has yet to flower.

This one on the bench with no leaves at all, now it is in flower is B. daigremontianum*. The very much branched structure is hung with pale pinkish mauve bells, both dainty and attractive. When in leaf it is one of the most handsome Bryophyllums, for the leaves are large and arrow shaped with scalloped edges, yellowish green in colour with flecks and veinings of purple and decorated round the edges with tiny plantlets; but they shrink, shrivel and fall when it is the flowers' turn to adorn the branchy framework.

A little further along and again planted in the ground is B. tubiflorum* nearly as tall as B. pubescens (Aliciae) with a magnificent umbrella of clear, bright orange hanging bells, even more pleasing though they lack the red veining of the latter. The queer leaves resemble a slightly flattened narrow tube stuck together down the centre, with on the end three or four perfect little plantlets. The leaves at the top of the stem stand upright while the others hang dejectedly, they look just like miniature palm trees. When the blossoms have finished cut off the flower head and plant it in a wide container. You will be delighted with the thicket of plants that will eventually spring from it. The flowers may not be quite so good as on a single plant but it is worth doing just for the novelty of it and from your experiment you will derive a great deal of pleasure. Byrophyllums flower during the winter (June in N.Z.) and on into August, early Spring.

*To be continued*

*For illustration see "Succulents for the Amateur" pg. 104.

# Third Trip to Baja California

LESLIE ANNE MILLS

Another year, another vacation and the big decision of where to go. When Kitty and Joe Sabo and Rod and I discussed the trip we found there were many more prerequisites than on our last two vacations. Kitty and I HAD to have cacti, growing in large quantities, all rare and some crested! Joe and Rod wanted a shorter trip with more time to relax and time to explore out of the way roads. Perhaps some fishing and definitely leisure time to loll on the beach in the sun. With our two week vacation we were limited in distance and

once more the only map that could provide any of these desires was the one on Baja California. There are certainly large quantities of cacti and perhaps some crests but the northern end only held one cactus that we knew we had not collected, Pachycereus orcuttii. "Somewhere off the road near El Rosario" was the only hint we had as to its type locality.

Arrived April 1 and we were driving to Tijuana, crossing the border, buying insurance and finding a motel. Up early the next morning and heading for Ensenada. A terrific hot Santana wind catching the tops of the waves, the spray blowing high in the air like sea horse's manes. Large clumps of Bergerocactus emoryii were blooming along the shores. In one clump we found three crests, two shaped like fists and the other branching out like wings, all were the beautiful gold of the new growth of that plant.

Kitty and Joe were driving their new International Travelall with four-wheel drive. Joe had very little time to install the refinements such as an extra gas tank and twenty gallon water tank. The water tank was welded under the right front fender and the gas tank under the car. This trip would decide if there were any changes to be made. And decide it did and almost immediately. Just before Ensenada we drove off the road for lunch, the right tire had dented the water tank and loosened it from its welds. The space between the top of the tire and the bottom of the tank is considerable but with the car tipped just a certain angle they did meet. Time out while the men removed the tank and put it inside the car.

Just north of Santo Tomas we saw a little track leading off through a field and decided it would be a good place to camp. In a little valley, with a wild flower carpet, we spent our first night. O. serpentina was in bloom and two of the largest Ferocacti viridescens we had ever seen were growing near. One was two feet tall and had a large lizard perched on top looking just like a miniature dinosaur.

The next morning we drove the ugly stretch of Colonia Guerrera, over wash board roads and past dreadful shacks built of tar paper, cardboard and anything the poor people could find. We stopped for lunch near the big Santa Gertrudis Ranch and to our collective horror we saw Kitty and Joe's extra gas tank hanging loosely under the car. The welds had broken and it would not have been long before it fell off and caused a bad accident. Fortunately we could chain it back up and it made the rest of the trip without mishap. In the afternoon we arrived at the beach near Socorro where we had camped on our first trip. Ferocactus fordii were blooming near us and the sandy cliffs were covered with Dudleya eximia. This was the first time we had seen F. fordii in flower. The deep red of its bloom would show us its location where one would hardly see it without flowers, so small and deepseated were these plants.

We drove slowly between Socorro and El Rosario looking for crested M. dioica. It was hot and dusty and we saw lots of snakes, as we walked by an Agave shawii we met our first rattlesnake, a copperhead. We began to think we preferred mud and rain to dust and rattlers. Collecting cacti with rattlers around is a nerve racking business, especially when the snakes are still too sluggish to rattle but not too sluggish to bite.

In El Rosario we decided to take the side road to Punta Baja and saw F. fordii, M. dioica and M. goodridgei on the hills. In collecting the fordiis we discovered they were badly infested with a big white borer. Often we dug up three or four before finding a healthy one. We always planted the infested ones again as they were blooming and could propagate from seed before they died. We dug one plant up and a two inch long white borer fell out of a hole in the bottom of the plant.

We found a lovely beach to camp on, sand stretching for miles in either direction, some rocks holding jewel like tidal pools and no one around. We immediately decided to stay two days and relax and cool off in the fresh sea breeze. Kitty and I couldn't completely relax, we had to comb the surrounding land for cacti. We really enjoyed walking slowly amongst the plants and not having to collect and race back to the car as on the other trips.

The ice box gave up. We had fresh food for five days but the heat had finished the ice off in two. Our pork chops didn't pass the sniff test so we cooked them at breakfast and heated them at dinner. The steaks were definitely "well hung" by the time we ate them but, surprisingly, the butter and eggs lasted another 10 days without going bad.

We awoke to a foggy morning and were glad this was our day to leave our lovely beach. After leaving El Rosario in a cloud of dust we started looking for Pachycereus orcuttii. We walked up countless arroyos and climbed hills peering in all directions for this elusive plant. With no directions to go on we knew it was next to impossible to find it and gave up. After traveling through the long valley out of El Rosario we climbed the steep winding road to the top of the mountain. We started searching for small Idria columnaris there. The new 12" limit on plants forced us to carry ruler in hand and finding Idrias was quite a hunt. As it was later in the year than on our last trip the Idrias

were all turning yellow and losing their leaves. They were not as attractive as when they had their thick green foliage but the young ones were a little easier to find as we would look for a golden bush and, more often than not, it was an Idria. After collecting a few of these we drove down the other side of the mountain. Very steep and a series of switchbacks, we drove in compound low, easing the tires over the jagged rocks. A wonderful view looking through a forest of Idrias, huge Pachycereus pringlei and Myrtillocactus cochal to the flat desert below. On reaching the bottom we took off cross country to find a camping spot and had quite an obstacle course avoiding all the large and small F. gracilis. We came to a mound of rocks which nature had made into a beautiful cactus garden. Idrias, F. gracilis with their bright red spines, M. dioicas, E. engelmannii with magenta flowers, M. goodridgeis, a two foot high crested F. gracilis acted as a specimen plant in nature's landscaping.

The following morning we drove on toward El Marmol, buying soft drinks at Rancho Arenoso as it had turned hot again. We decided we would have lunch at one of the ranches and ended up at Rancho San Augustin. We sat on a bench in their palm leaf covered porch and drank beer while the meal was being prepared. We waged war with the flies and the odor of extremely well hung meat was wafted to us on the breeze! It was all worth it. We were served a really delicious meal, salad, meat cooked with onions, panfried potatoes, refried beans and a large plate of tortillas. We ate every scrap and then had a custard dessert and coffee. After such an enormous lunch we knew why the Mexicans took siestas in the afternoon.

We reached our southernmost destination, El Marmol, in the late afternoon. It was a real ghost town, well kept mining houses, clean dirt streets but not a soul in sight and complete silence. At last we saw a chicken and then a dog and finally met the only occupant, the guard. The mines were all shut down but would resume work in the near future and then it will be a bustling town with children the marble schoolhouse again. We asked the guard about the road to Catavina as we were thinking of going there to see the ammonite deposits. He assured us it wasn't too bad but it was a long way off course and we would have to take the same road back again. We decided not to go but did camp on the turn off for Catavina. Once again nature had supplied us with a beautiful rock garden of cacti. O. tesajo, a mass of yellow blossoms, E. engelmannii with contrasting purple blooms, Idrias for height, wild flowers and, just to add spice, a coiled rattlesnake!

The next morning we headed north again and Kitty found the largest clump of M. brandeegeis we had ever seen. Six heads, the largest head 4 inches across and the whole clump 12 inches broad. We also collected several cuttings of crested chollas. On nearing El Rosario we decided to drive up the Arroyo del Rosario still nursing a hope of finding P. orcuttii. We found a nice sandy camp with Dudleya brittonii on the hills. After our usual early to bed we were early to rise and drove to the end of the arroyo. Pachycereus pringlei, Idrias, B. emoryii and O. rosarica all around us but no P. orcuttii.

Driving back to El Rosario we were enveloped in dust, it came through the floor boards and filtered like flour through the car. We were covered with it and all had white hair and eyebrows and our white dog Andrew was yellow. We met a truck that had broken down and Joe gave him a tow to get him started. There was every conceivable thing in the back of the truck. Under the firewood and old car mufflers and Idria skeletons were some ammonite deposits. Huge fossilized sea snails, two were as large as car wheels. They were really fantastic and we regretted not going down the Catavina road to see them.

While buying gas in El Rosario we met Senora Anita Espinosa, the owner of a store there. We had a long and interesting conversation with her and when we told her we were interested in cacti she immediately asked if we knew Dr. Geo. Lindsay. We started exchanging names of people interested in cacti and found we had many acquaintances in common. We mentioned our unsuccessful search for P. orcuttii and she promptly showed us two cuttings her husband had collected a few days before. If we had had the time we would have back tracked to where the Senora told us this plant grew, but lacking the time she offered us the cuttings she had. We were really thrilled and made a contribution to her hospital to show our appreciation. The day had gone before we knew it so we decided to find another beach camp in the Punta Baja area. We took a different road after reaching the top of the mountain and found several deserted lobster fishing camps. The fog started to roll in as we found another nice beach camp. The wind came up and Joe decided we needed the tent. Rod was busy greasing the jeep so Kitty and I were recruited to hold the tent poles. The wind rushed under the tent and Kitty and I were raised off the ground and pulled around but we clung on with grim determination until SNAP, one of the tent poles broke and threw

Kitty on her back! When she could breathe again we walked off to look for cacti and left the tent to the men. When we returned the tent was up with aluminum poles and the stove, men and dog were all installed inside. Our garbage pit had been dug in a badly chosen spot and later that evening a crash and muttering told us that Kitty had fallen in! We all decided the only safe place was bed.

We left our beach camp the next morning and drove slowly back to El Rosario looking for crests all the way. I spotted a crested dioica, the first on the trip, it was promptly photographed and collected. Then I saw another and Kitty found a crest almost immediately after. How strange cacti collecting is, for ten days we peered at dioicas and never saw a crest and in a two mile stretch we found three!

Our map showed a road that ran from the border in the north, down the center of the peninsula and then bore east to San Felipe. We had always wanted to take this road and as we traveled north we made inquiries about a connecting road from Numero Uno. We were told at Bradley's station in San Telmo that we could reach this road just below San Vicente at Rancho Llano colorado. We were also told it was a terrible road only fit for motorcycles. We decided we would take it just in case there was a cactus growing there we didn't already have.

We found the entrance to Rancho Colorado and wound our way through a really lush valley with ranch houses and fields. Then we started climbing the mountains and the road became two very unused and rutted tracks. We were in four-wheel drive all the way up and the speedometers registered one-half mile per hour. We camped on a plateau near the top and began to wonder if this had been a good idea. We only had three days left and at this rate, we wouldn't make it home. After a cold night with a magnificent moon beaming on us, we decided to go on a bit further. We were glad we did as the road improved and we were racing along at 10 m.p.m.! We entered Valle Trinidad and had quite a time finding the right road out. Finally we connected with the Tecate-San Felipe road and turned north. All the way through the mountains we only saw O. serpentina, even M. dioica had deserted us, but on the mountains around Valle Trinidad we saw hundreds of F. rostii, some nearly 5 feet in height. There were many E. engelmannii in bloom and a Mammillaria very similar to M. dioica but much more globose. The tallest one about 4 inches high but also 4 inches across. Kitty found one crested and also a crested E. engelmannii. We climbed out of Valle Trinidad, the road sandy but good, and saw many varieties of Opuntias. At last I found a large crested E. engelmannii so we were all content.

We decided to take the cut-off to Ensenada instead of continuing north. We really felt a night in a motel to tidy ourselves up and a much needed bath were in order. Our last camp was made and Kitty and I spent the evening cleaning and packing the plants we had collected.

The following morning we were in Ensenada and took a quick drive to Agua Caliente to see Echinocereus pacificus. Unfortunately most of the blooms were over but we had an exciting bit of mountain climbing in search of crests. E. pacificus likes to grow out of the rock on the edge of precipices and it is quite a feat to get near enough to even photograph them. We didn't collect any plants as we already had them at home and didn't find any crests. After a noisy night in Ensenada we took the Ensenada to Tecate road. The first part was wash board and then it was paved and a real high speed highway.

Once more we went through customs at the border and were delighted to find Idrias could come through without fumigation, only inspection like the cacti.

It was good to be home again, our gardens were blooming and the plants were so healthy. A wonderful time of year to start our cuttings and plants. It is such a satisfaction to see collected plants grow and bloom and even stand the frost.

We feel we have seen the last of northern Baja California for a few years but already the thought comes, "Where will we go next year?".

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Woodland Hills,
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Dr. G. W. Reynolds, author of "Aloes of South Africa," is completing his research at the Royal Botanic Garden, Kew, for the second volume of his monograph on the genus Aloe. It is hoped to be printed by late 1961 and will be about the same size as Vol. I.

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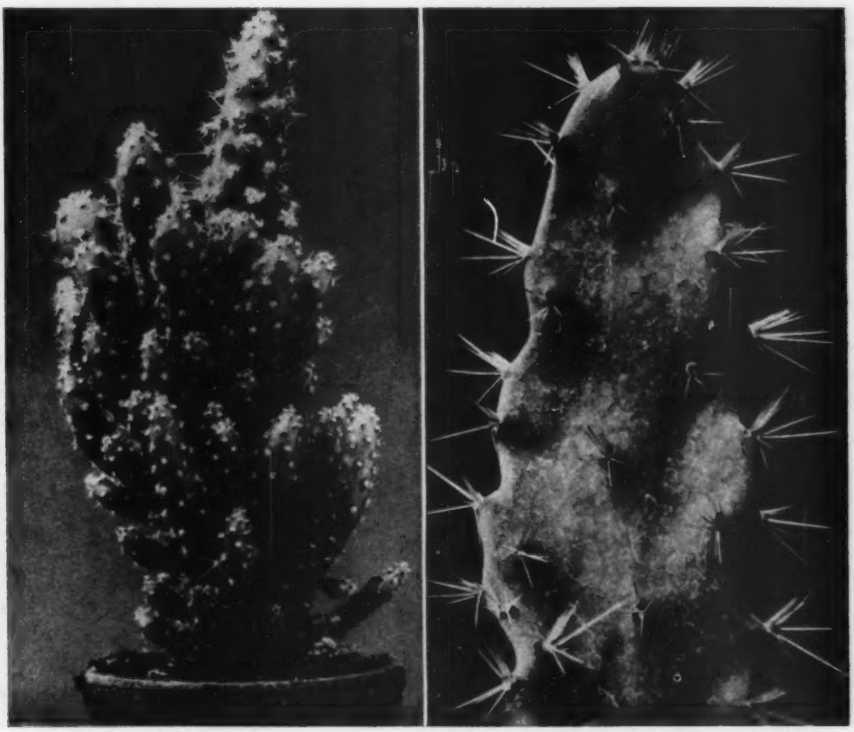


Fig. 78
Opuntia tuna. Left: monstrose form. Right: Upper part of a normal stem which grew out of a monstrose plant. Photo by R. Gräser.

# *Opuntia tuna monstrosa*

*By* ROBERT GRAESER

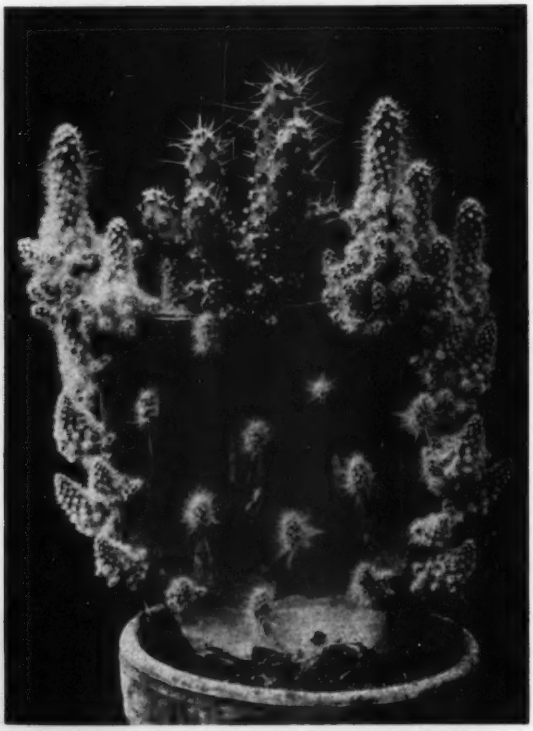
Translated by Bert Mueller from "Kakteen und Anderer Sukkulenten"

*Opuntia tuna* grows to more than 6 feet high and is not suitable for small collections. The elliptic stems (not leaves) are about 10 in. long and 6 in. wide, with yellow spines mostly ⅜ to 1¼ in. long and quite sharp.

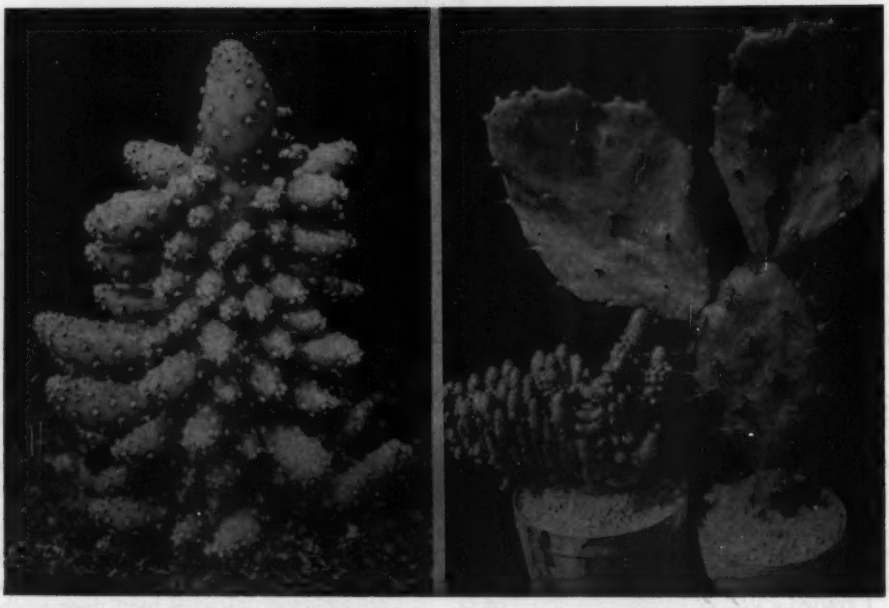
*O. tuna monstrosa,* a form or variety of *O. tuna,* has become quite popular in most collections on account of the ease in propagation. It has little in common with *O. tuna* and stays small with round or oval stems with numerous small areoles and weak spines. It has the curious habit of sprouting new stems from all areoles especially from the lower ones and every new stem will do the same with the result of a quickly forming small bizarre-looking cluster.

I grafted a stem of *O. tuna monstrosa* on *O. senilis;* the latter may be a florist's name. In Berger it is described as *O. crinifera* Pfeif. (1837); in "Kaktus-ABC" as *O. orbiculata* Salm Dyck (1837). The interesting part is that whenever I grafted other kinds of my *O. senilis* there would be one or two sprouts from the top areoles which would get to be 6 in. long and nearly as wide. Fig. 79 shows what happened when I grafted *O. tuna monstrosa* on this *O. senilis;* the latter sprouted stems from every areole including the lower ones; these were not normal but monstrose, more or less rounded in cross section with many small areoles and small weak spines similar to those of the scion, *O. tuna monstrosa.*

Similar observataions can be made on the well known house plant *Abutilon.* When grafting twigs or even leaves of *A. thompsonii* which is a yellow-green variegated form, upon another *Abutilon* with normal green leaves, the green stock will develop yellow-green variegated leaves also called "Infektiose Chlorose".



Right: Fig. 79. *Opuntia tuna monstrosa* grafted on *O. senilis*. 3/5 natural size. Photo by Gräser. Fig. 80 (below).



Hummel's Exotic Gardens in Carlsbad, California list this monstrose Opuntia under his coined name "Opuntia Maverick" the "heckle and hide" of the cactus family. "Miniature elongated pads from which erups myriads of tiny pads". Right: Monstrose and normal forms also photographed in Hummel's Garden. Haselton photo.

In our case there could be a disease which transforms such a large normal plant as *O. tuna* into such a small bizarre cluster and also infects *O. senilis,* too, after grafting.

When grafting *O. tuna monstrosa* on either *Trichocereus spachianus, Eriocereus jusbertii,* or *Cylindropuntia subulata,* the stock did not change. These plants seem to be immune. The following two plants seem to take a place in between. After grafting *O. tuna monstrosa* on *O. crassa,* the stock only grew one stem from one of the top areoles and none from the lower ones. This stem was seemingly normal but stopped growing after reaching a length of 4 in., then started to grow stems from its lower areoles. They are too small as yet to tell what they look like.

When using *O. microdasys* as stock, there were first only normal stems from the side areoles, then there grew stems that stayed small and finally there were a lot of smaller and weaker stems. In these two cases, the stock seem to be also infected with this "disease" only not so noticeable as with *O. senilis.*

I noticed at my brother Alfred Graeser's Nursery several *O. tuna monstrosa* which have overcome this disease and grew normal and healthy stems of *O. tuna.*

Time permitting, I would like to make the following experiment: first to get aphis which will feed on both *O. tuna monstrosa* and on *O. senilis* to find out whether they can transfer this disease similar to diseases on potatoes. Also to try to transfer this disease my using a knife on *O. tuna monstrosa,* then without cleaning, on *O. senilis* as is done in cutting geranium cuttings.

Robert Graeser
Nurnberg, Koler Strasse 22

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**PRESIDENT'S MESSAGE**

By the time this article appears in print the Annual Meeting of the Cactus and Succulent Society of America, Inc., will have come and gone; but at the time this is being written, plans are being furthered for this yearly meeting of the Society. This year members will gather at the Franklin Crosby Cactus and Succulent Ranch in the Malibu Hills overlooking the Pacific Ocean. The speaker of the day will be Don B. Skinner, a member of the Board, Chairman of the Research Committee and Supervisor of the Nursery and Ag. Gardens for the Jr. and Sr. High Schools of the Los Angeles School System. Door prizes and plant raffles mixed with committee reports and views of the fine plants in the Crosby gardens will complete the day.

In my last report I mentioned that we were working on the By-Laws of the Society and I am happy to report that they are almost ready. One more change, that regarding the Annual meeting; so that in the future all details of the Annual meeting will appear in the July-August issue, and we should be up to date with our By-Laws. A full copy of the By-Laws should appear in the January-February Issue of the Journal.

The July, 1961 Convention of the Society in Mexico is being furthered this week as Pat and Slim Moorten and Mr. and Mrs. Harry Johnson left for Mexico City to look over the hotels and arrange for possible field trips into some very exciting cactus areas. Remember you must have a recent Smallpox vaccination in order to get back into the United States so how about seeing your Doctor now for those shots?

I was most gratified by the response to the Financial report I made in my last report. A list of the many new sustaining members should appear elsewhere in this Journal. Will your name be among them? There are several new associate members also as a result of the report. Thanks everyone.

We have a new Corresponding Secretary; that is, new as a corresponding secretary, but well known to many of you; Mrs. Ethel Rush, 820 West 115th Street, Los Angeles 4, Calif. This is a new office to help take the load off the Recording Secretary, Mr. William Bently, 10608 Poinciana, Whittier, Calif., and the Affiliate Secretary, Mrs. Murray Skinner, 8627 Denver, Los Angeles 44, Calif.

EDWARD S. TAYLOR, President

CONVENTION IN MEXICO 1961

The 9th Biennial Convention of the Society will be quite different from any previous conventions. It will be a great adventure in a great cactus country. It is to be primarily a tour of the most wonderful cactus fields in the world.

Headquarters will be a hotel in Mexico City where the first two days will include registration, opening sessions with introduction of delegates, etc. Then about four days of organized tours.

We have been working on plans at a long range, however as I write this, we are preparing to travel to Mexico City to confer directly with Dudley Gold of the Mexican Cactus Society where we will work out the details together. Also we will decide on hotels and transportation.

The Society's past president, Harry Johnson, Sr. and Mrs. Johnson are travelling with us so we will have their help and advice on the many details and arrangements. Dr. Gerald Barad of Ringoes, New Jersey, will be the eastern representative and is willing and ready to help everyone interested.

I am honored to be appointed chairman of the Convention but I realize the great responsibility involved. I shall endeavor to make the best possible arrangements for everyone's satisfaction. I'll need a great deal of cooperation and assistance from all members. In the next Journal we will give you a definite report from our scouting in Mexico. PATRICIA MOORTEN

# Cactus Deserts in Western Canada

*By* CLARENCE KL. HORICH

Canada, as you will admit, is known to most of us as a huge tank of frozen earth—or so we believe. And there are all those things which you have read about—glaciers, grizzly bears, trappers, eskimos, artic tundras, igloos, dark spruce forests and wide, horizon-less prairies covered with wheat as far as your eye will reach. But if someone would talk about arid desert stretches crawling with rattlesnakes and painted in the silvery grey of low sagebrush and cactus spines, your imagination would immediately carry you thousands of miles south from the Canadian border, to Texas, Arizona, California. Yet, these cactus deserts are as much a part of Canada as ars glaciers and sub-zero temperatures!

During the years of my residence in British Columbia (western Canada), I travelled widely into the interior of this province and into neighboring Alberta, and I have thereby come across desert stretches as wild and as hot, in the summer, as those found in the tropics. Shall we take a look on the map?

Starting out at the Pacific Coast, at the seaport of Vancouver, B. C. we notice a blunt mountain range that starts immediately to the north of Vancouver's Burrard Inlet—a range of wild, icy and partly unexplored mountain peaks, boreal forests and wildly torn glaciers which continue uninterruptedly northward right into Yukon Territory and Alaska. Eastbound, a fairly narrow mainland belt extends unto the Cascade Mountains which describe, once again, a forlorn world of mighty mountain peaks, steep, heavily spruce or cedar forested slopes and canyons, crossed by the Trans Canada Highway and the C. P. R. railroads until you reach more or less the area near the small country town of Princeton and, a bit further on, the Okanagan River and Lake region.

And here, flanked westward by Cascade Range and eastward by Kootenays and the Rocky Mountains lies the "Dry Belt" of British Columbia with mountains topped by pine forests and hills and valleys settled with endless stretches of sagebrush. In January and February, temperatures will frequently drop to 40 degrees F. below, but in July or August, they climb to equal extremes, often hitting the 100°F. mark.

If we take a stroll along any of the trails, or climb the eroded clay walls or gulches, we will soon sumble across a savage rattlesnake, a furious bull, a group of cowboys or a mass of nastily spined cacti!

*Opuntia fragilis* is the name of this Prickly Pear which has come a long way from the south, migrating across the Canadian border and adapting itself to a pioneer life between tropical summer heat and murderous winter frost.

The entire Okanagan Valley is heavily infested with this cactus-oddity, whether you stop in lovely Kelowna, admire the fruit tree blossoms at Penticton, or follow the road south towards the near U. S. border close to Okanagan Falls, Oliver and Osoyoos.

*Opuntia fragilis* is a dwarf if compared with her truly tropical ancestors; the roundish-oval joints remain closely cuddled to the ground, 2-3 inches high, creeping and rooting in all directions until large, solid colonies have grown, but never daring to rise. It is as though nature has tried an experiment with these children of sun and heat, opening a dry-land trail to the north from their subtropical home—a trail that would lead east of the mountains from Arizona and California over eastern Oregon and Idaho-Montana into Canada. A continental belt protected from the heavy rains of the Pacific Ocean by means of the western mountains, unblocked by insurpassable mountain barriers that might have run in an east-west direction and thus shunning off all efforts of a migrating flora to gain territory.

Most of the cacti had to succumb from one obstacle, of course, the growing cold, and only a few particularly resistant and mutable species would be able to reach the north. One species of *Mammillaria, Opuntia fragilis* and her close relative *Opuntia polyacantha* "made it" and thus describe the world's northernmost representatives of the cactus family.

In British Columbia, we will not likely find the *Mammillaria (vivipara),* but an effort will reveal to us the haunts of *Opuntia polyacantha,* which is much rarer than *O. fragilis,* and also, much prettier! In order to locate the flat-stemmed, large yellow-flowered *O. polyacantha* we must leave the Okanagan Valley although the species might occur here, too, and proceed to Lillouett and then follow the Alaska Highway a few miles northward. Actually, the lower portion of this highway is known in B. C. as the "Caribou Highway". It branches off at a tiny village or ranch station which you should keep in good memory, Cache Creek. For some 8 or 10 miles, almost unto Clinton, *Opuntia polyacantha* is frequent along the Caribou Road, and it also extends from the road junction at Cache Creek into this sagebrush country that borders the Kamloops road all along the way. In fact, here it can be found growing together with *O. fragilis* and I still wonder whether or not a hybrid be-

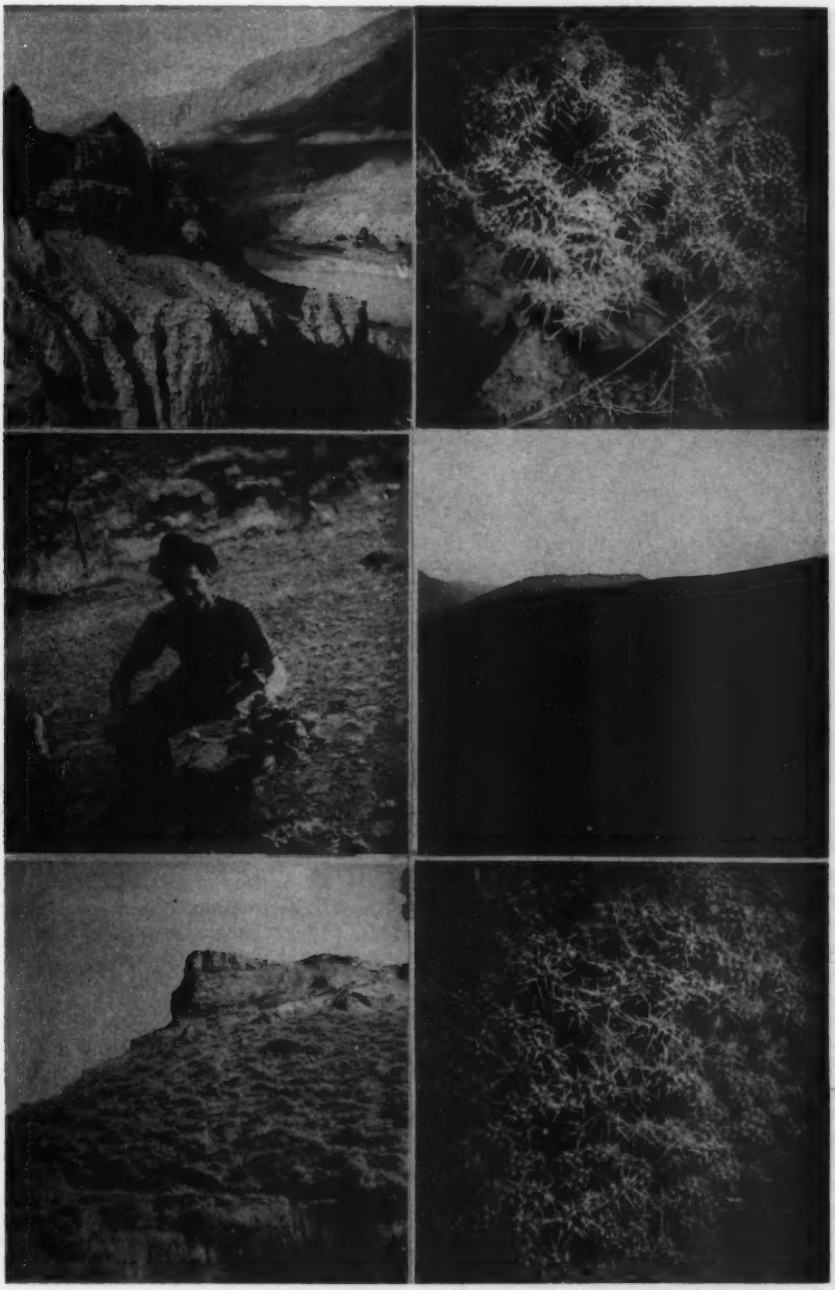

Fig. 81

Top left: Eroded formations in the Painted Desert of British Columbia, Canada. Habitat of *Opuntia polyacantha*. Right: close-up of plant. Center left: The author with a plant near Carquille. Center right: Sagebrush deserts in northern and central British Columbia, between Cache Creek and Kamloops. Home of *Opuntia fragilis*. Bottom left: Typical habitat of *O. fragilis* in the dry belt near Penticton. Bottom right: *O. fragilis*. Photos by author in 1953.

tween these two species will be found here some day.

One of the wildest desert areas which I have visited while in Canada is British Columbia's "Painted Desert", a section of the upper Fraser River, which only a few souls have ever seen and which can be reached by leaving Clinton in western direction towards Jesmond and Big Bar Creek on a dirt road that requires a couple of spare tires and brakes that do work! Some 40 miles of mountains and forests have to be tackled, black bear and moose stride calmly across the "road" and there is no gas station and no hotel until you reach Big Bar Creek which is a cattle farm or worse. At this spot, your car engine is boiling, but before you spreads a wild, majestic desert valley in all colors, like an artist's conception of a moon scenery in desolation. The edges and pinnacles that frame the rushing Fraser River here are so dry, so eroded that even the sagebrush cannot live here everywhere. Temperatures around noon climb to way over 100°F. in midsummer. But once the primitive ferry has pushed you across the river and you start your hike to far-away Razor Ridge, you will soon feel as though you were in the heart of the Mexican desert, and the leather of your shoes will be penetrated by the long and painful spines of our *Opuntias!* Is it any wonder that plants of such a definitely tropical origin such as cacti have found a home so close to the arctic circle?

I have maintained a number of the *Opuntia* species native to British Columbia's "Dry Belts" in cultivation later, planting them outdoors in relatively much warmer Vancouver city, yet, they mostly rotted and actually froze!

Only a few specimens survived the Vancouver climate because the coastal climate is comparatively too warm during the winter months and, above all, far too humid and wet. In the dry belt, our Opuntias would obtain rainfalls during the spring months but from June-July on until November and December, there was nothing but heat and sun until the plants were so dehydrated that they appeared shriveled. Frost and snow did no harm to the semi-dehydrated plant thereafter. But on the coast, the stems and joints were bulging with water absorbed during the pre-winter months, and then the frost would harm, if not destroy the plant.

Thus, the Canadian cacti species, while tolerant to subzero temperatures if kept dry, will take harm from frost if they are swollen with water at the beginning of the cold spell. And, after all, Prickly Pears are typical desert plants everywhere, whether in the tropics or below the arctic circle!

Lista de Correos
San Jose, Costa Rica C.A.

## QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

*Question:* When I keep my Echeveria subridgida near the glass the leaves turn down around the pot. I have tried to follow Mr. Kimnach's article, but the leaves persist in turning down. Sanseveria parva the tips of the leaves turn brown. S. zeylanica they don't. Greenovia; why are not these offered for sale? I constantly find small blue-black balls on my plants. I must use a 10 or 20 power glass of course to see them, as that is the only way to find the insects. Are they eggs or insect droppings? I cannot find insects on the plants, and cannot understand where they come from.

Mrs. Joseph Pomerantz
Pennsylvania

*Answer:* It may possibly be your temperatures are too high, or your shade is too dense. E. subridiga, in my experience, wants to be kept very much on the dry side in a very light position. As regards Sanserveria parva; many succulent plants as Aloe, etc., naturally die back at the tips in the wilds. This is probably natural on your plant. Greenovias are extremely subject to mealy bugs—and also have a summer dormant period when too much water will cause them to rot. They are fairly allergic to sprays also. In a nursery they are always a source of infection. The small black balls probably are not caused by insects. The surface of many succulents is covered with a waxy coating on which soot or smog lands. At night the air warms, moisture is precipitated on the cold leaves, and surface tension causes it to form tiny droplets on the waxy epidermis. The droplets dry, leaving a residue of smog or soot. Sometimes leaves exude a sweetish exudation on which a black fungus grows, giving the leaves a dirty black appearance. If aphis have been present, they are continually exuding sweet moisture on which ants feed. The leaves are fine for this black fungus.

### CEREUSLY SPEAKING

Copy arrived too late to be transcribed for this issue. Because of the color plate, we had to have the printing done 10 days earlier than the usual schedule. Do you remember when John started his column in February, 1942?

### SPINE CHATS

Because Lad Cutak has had such a busy year with his new Climatron, acquiring and moving huge palms, besides his many other duties, we have not pushed him for his valued column. We hope this fall he will have time to report, as he used to, the new species and what is new in the Cactus World.

# CULTIVATED AND NATIVE AGAVES IN THE SOUTHWESTERN UNITED STATES

AUGUST J. BREITUNG
1416 S. Glendale Ave., Glendale, California

PART 10

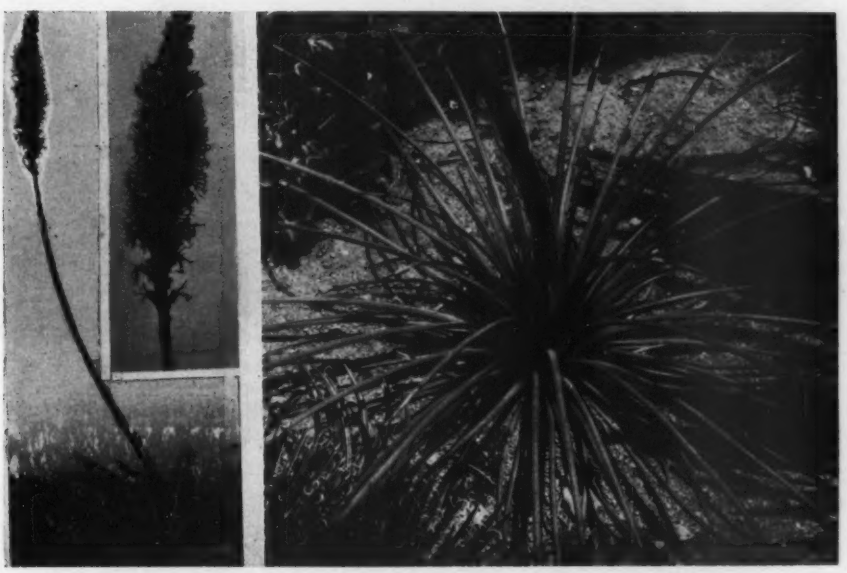

Fig. 82
*Agave striata.* Grown by the Los Angeles County Arboretum and Botanical Garden, Arcadia, California. Right: rosette approx. 1/4 natural size. Left and inset: inflorescence greatly reduced.

## SECTION 4, SCHOENOAGAVE, Berger

**Agave striata** Zuccarini, Act. Acad. Caes. Leop.-Carol. 16: 678, 1833.

Distribution: Mexico; Hidalgo, cultivated in Europe from Real del Monte.

Rosette 4 to 5 dm. in diameter, short stemmed, branching when old, very leafy; blades gray-green, 3.5 cm. wide at triangular base, abruptly narrowly linear, 40 to 45 cm. long, 4 to 6 mm. wide, rhombically biconvex, slightly scabrid on the margin, the surface with close round parallel ribs separated by narrow whitened grooves, spine very slender, 10 to 18 mm. long, 1 to 2 mm. wide; scape 3 to 4 m. high, beset with narrowly linear bracts, flowers in a short dense spike, perianth 25 to 30 mm. long, green with pale tipped segments. June-July.

**Agave echinoides** Jacobi, Abh. Schles. Ges. Vaterl. Cult. 1868: 163, 1868.

*A striata* var. *echinoides* Baker, Gard. Chron. new series, 8: 556, 1877.

Distribution: Mexico; type cultivated in Europe without citation of locality.

Rosette single, 3 to 3.5 dm. in diameter, leaves numerous, stiff, straight or slightly falcate, gray-green, biconvex, 5 mm. wide, 12 to 15 cm. long from a broad base, surface narrowly ribbed, margin slightly scabrid, spine 3 mm. wide, 25 mm. long. Scarce in cultivation. Living plants observed grown by R. H. Diehl, Vista, California.

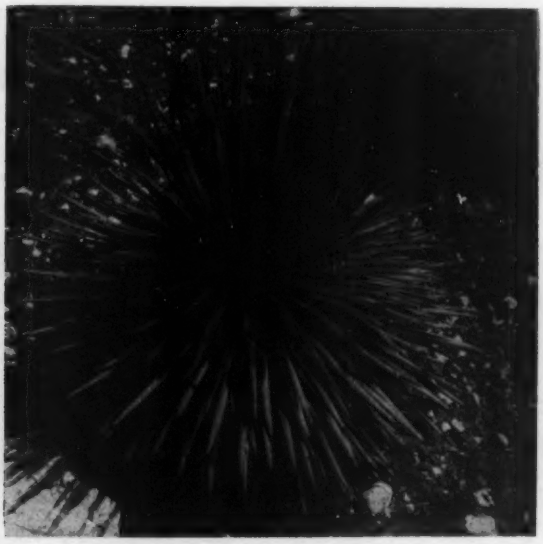

Fig. 83

*Agave echinoides*. Grown by J. Marnier-Lapostolle. Approx. ¼ natural size.

introduced from Mexico from Fritz Schwartz. Additional specimens were received from J. Marnier-Lapostolle.*

**Agave stricta** Salm-Dyck, Bonplandia 7: 94, 1859.
*A. hystrix* Cels. Cat. 1861: 19, 1861.
*A. striata* var. *stricta* Baker, Gard. Chron. new series 8: 556, 1877.

Distribution: Mexico: Puebla, common around Tehuacan, type cultivated in Europe.

Rosette 5 to 6 dm. in diameter, often much branched from a short stem; leaves very numerous, 25 to 35 cm. long, 6 to 10 mm. wide, gray-green, biconvex, surface with parallel ribs, margin at most scabrid, spine 20 to 25 mm. long, 3 mm. wide, reddish-brown, becoming gray; 2.30 m. high, flowers in a dense 7 dm. long spike, perianth 12 to 13 mm. long. July-Aug.

**Agave falcata** Engleman, Trans. Acad. St. Louis 3: 304, 370, 1875.
*A. californica* Baker, Gard. Chron. new series 8: 556, 1877.

Distribution: Mexico; Coahuila (type locality, Buenevista) Durango, Zazatecas and Nuevo Leon.

Rosette single, in age branched, 6 to 10 dm. in diameter; leaves rather numerous, spreading, often falcate, gray or purplish, evanescently glaucous, 4 to 8 dm. long, 12 to 15 mm. wide, flat above, keeled beneath, finely striate ridged, margin minutely denticulate, spine 22 to 35 mm. long, 3 to 4 mm. wide, triangular, brown; scape 2 to 3 m. high, slender, terminated by a loose flower-spike, bracts numerous, whitish-papery, linear-attenuate, 1 to 2 mm. wide, 10 to 15 cm. long, flowers 35 to 40 mm. long including the ovary, perianth 14 to 17 mm. long. Dec.-Jan.

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*The writer hereby gratefully acknowledges receiving living plants, herbarium specimens and photographs of Agave cultivated in the Jardin Botanique "Les Cedres," St. Jean-Cap-Ferrat, France. Consequently, the following species of Agave appear to be new introductions into the Southwestern United States and are included in this and subsequent articles: *Agave xalapensis, A. dasylirioides* var. *dealbata, A. yuccaefolia, A. ellemeetiana, A. pruinosa* and *A. lurida*. (*Agave xalapensis* was illustrated in the Cactus and Succ. Journ. 31(2): 47, fig. 21, 1959 is correctly *Agave macrantha*.)

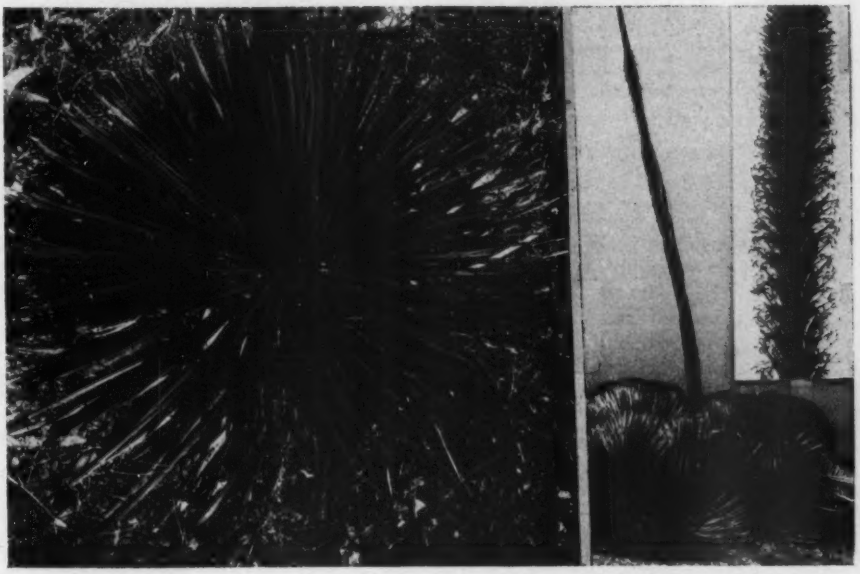

Fig. 84

*Agave stricta.* Left: rosette grown by Hayes Schlundt, Pasadena, California, approx. 1/6 natural size. Right and inset: habit and close-up of inflorescence grown in the Huntington Botanical Garden, San Marino, California.

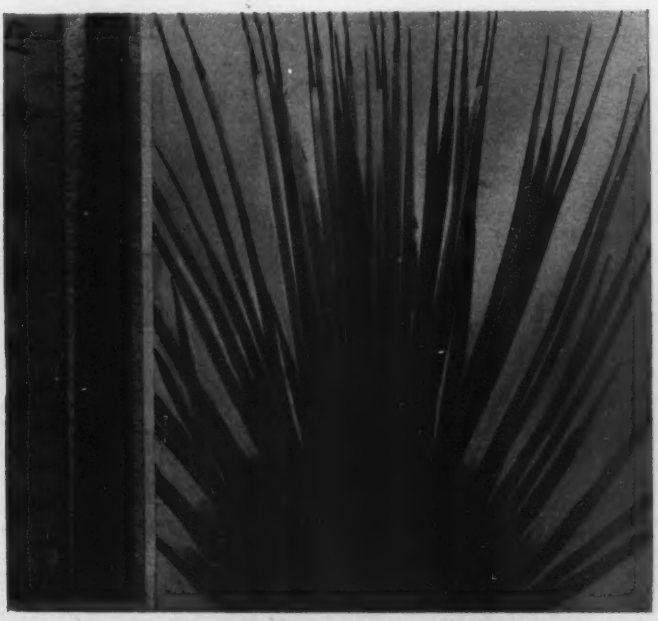

Fig. 85

*Agave falcata.* Right: rosette grown by Howard S. Gentry, Murrieta, California, approx. ⅓ natural size. Left: enlarged leaf margin, photographed by J. Marnier-Lapostolle.

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